Health Care Financing

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Health Care Financing Research Report

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Health Care Financing Research Report

Ten Years of Short-Stay Hospital Utilization and Costs Under Medicare: 1967–1976

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Foreword

This report was written by Charles Helbing of the Program Statistics Branch, Office of Research. Significant contributions to the report were made by Roger L. McClung; Herbert A. Silverman, Chief, Program Statistics Branch; and Allen Dobson, Director, Division of Beneficiary Studies. This report is one of a series prepared in the Office of Research, Judith Lave, Director, to provide a description and analysis of the use and cost of the health care benefits furnished to the beneficiaries of the Medicare and Medicaid programs administered by the Health Care Financing Administration.

Important contributions for the tabulation of the statistical content of this report were made by Gene Stickler, Irving Goldstein, Marilyn Newton, Lonnie Howard, Kathy Smith, and many other members of the Office of Statistics and Data Management. Statistical and software services were provided by Kathryn Barrett, Edye Peterson, Vikki Latta, and Betty Gunn and typing services were provided by Rosemary Goode and Adele Deaver. The estimates of statistical reliability were prepared by James Beebe of the Statistical Research Services Branch of the Office of Research.

I. Introduction

A. Purpose and Scope.

This report presents a statistical review of the first 10 years (1967-1976) of short-stay hospital services furnished to aged beneficiaries under the Medicare Hospital Insurance (HI) Program. National and regional estimates of short-stay hospital use, charges, and amounts reimbursed are examined.

This introduction presents an overview of the report, gives a summary of data sources and limitations and provides key findings. Section II describes and analyzes the relationship between Medicare HI expenditures and national health care expenditures for the period 1967-1976. The major portion of the report (sections III-XII) examines the characteristics of aged persons enrolled for HI, the characteristics of participating providers of services, and the patterns of use, charges, and reimbursement for aged beneficiaries discharged from short-stay hospitals during the 10-year period. Section XIII compares short-stay hospital utilization by the aged medicare beneficiaries with that of the total U.S. population during 1976. The last section of this report provides a brief summary of the impact of the Medicare program on the aged population.

B. Legislative Development

Federal health insurance was first contemplated by Congress as part of the original Social Security Act of 1935. However, active congressional consideration in this area was not undertaken until the late 1940's. The Federal health insurance program for the aged (Medicare) was finally enacted on July 30, 1965 as Title XVIII of the Social Security Act (P.L. 89-97). The provisions of the Medicare legislation incorporated two major compromises which were necessary for enactment. First, Medicare was to provide federal health insurance coverage only to the elderly—the group with the greatest incidence of illness and disability, the greatest tendency to use hospital services, and the lowest income level. Second, Medicare legislation stipulated that the program would not "exercise any supervision or control over the practice of medicine or the manner in which medical services are provided . . . ."

The original Medicare legislation established two coordinated health insurance programs for the aged: Part A, or hospital insurance (HI), provided a basic plan affording protection against the costs of hospital and related services; and Part B, or supplementary medical insurance (SMI), provided a voluntary plan covering payment for physicians' services and other related medical and health services. The 1972 Amendments to the Social Security Act (P.L. 92-603) extended Medicare coverage (effective July 1, 1973) to disabled beneficiaries under the social security and railroad retirement programs, and to persons under age 65 who require dialysis or a kidney transplant for chronic renal disease.

C. Relationship of Short-Stay Hospital Coverage to the Overall Medicare Program

The Medicare program is designed to assure that the elderly and disabled will not be denied access to basic medical care for financial reasons[1]. The program does not provide total coverage for the costs of medical care. The emphasis is on the coverage of hospital care and physician services for acute illness. Nursing home care is covered only if it is required as an extension of a hospital stay and only if skilled nursing care is required and provided. Routine physical examinations, dental and eye care, and drugs are excluded.

The primary intent of the Medicare program, therefore, is to pay the major portion of hospital and physician bills for services determined by a qualified physician to be medically necessary. For services rendered in FY 1976, for example, total Medicare expenditures for the aged amounted to $14.9 billion; of this total, $11.2 billion were for hospital care, $3.2 billion were for physician and related services, and only $0.5 billion were for skilled nursing facility care and other professional medical services. Short-stay hospital expenditures accounted for about 95 percent of all HI expenditures and for approximately 70 percent of all Medicare (HI and SMI) expenditures for the aged.

D. Provisions of the Hospital Insurance (HI) Program

The primary legislative intent of the Medicare HI program is to provide basic hospital insurance coverage to eligible persons so that essential hospital services will be available regardless of ability to pay.

Medicare legislation limits the services covered under the HI program by using the concept of the "benefit period." A benefit period begins with the first day of hospitalization and ends when the individual has not been a bed patient in a hospital or skilled nursing facility for 60 consecutive days. The HI program pays for the "reasonable costs" of covered services in a par-

[1]As of July 1, 1976, there were about 22.9 million elderly persons eligible for benefits under the Medicare HI program.

ticipating hospital for up to 90 days in a benefit period. Covered hospital services include room and board in accommodations containing from two to four beds, nursing services (except for private duty nursing), drugs and biologicals, and other services ordinarily furnished by a hospital to its inpatients. Among the services not covered in a hospital are private room accommodations, convenience items such as television and telephone, and private nurses.

In addition to hospital services, the HI program also provides a maximum of 100 post-hospital days in a skilled nursing facility during a benefit period and up to 100 visits for post-hospital home health care services during the one year period following the beginning of the benefit period. To be eligible for these benefits, the beneficiary must have been an inpatient in a hospital for a medically necessary stay of at least three consecutive days. For services to be covered under HI, they must be provided by institutions and agencies that have been certified as qualified providers of services, and providers must have signed an agreement to participate in the program (Medicare: Health Insurance for the Aged, 1972-74).

The Medicare law also established cost sharing by the patient through deductible and coinsurance payments. Full payment is made for the first 60 days of hospitalization less a deductible applicable to each benefit period. The deductible approximates the current cost of one day of care in a hospital. For each of the remaining 30 days in the benefit period, the patient pays a coinsurance amount equal to one-fourth of the deductible. Each HI beneficiary also has a "lifetime reserve" of 60 additional hospital days which can be used at his option when he has exhausted the 90 days covered in a benefit period. The coinsurance amount for lifetime reserve days is equal to one-half of the deductible. The cost of the first three pints of blood furnished a patient during a benefit period is also deductible unless the patient arranges for replacement. Charges for any additional blood are covered under the program as are the charges for blood administration, storage, etc.

The HI program is financed primarily through a tax on a portion of current earnings in employment covered under the Social Security Act and monies collected from the railroad retirement system. The proceeds of this tax are placed in the Federal HI Trust Fund from which reimbursements are made for all benefits and administrative expenses incurred under the HI program (The Social Security Act and Related Laws, 1978).

E. Data Sources, Analytic Variables, and Limitations

1. Data Sources

The data in this report were derived from special reports prepared in HCFA and from short-stay hospital discharge records which were processed for inclusion in the short-stay hospital annual series tabulations for each of the years 1967-1976. The master inpatient stay record file used to prepare this report is generated by linking information from three HCFA master program files—Central Bill, Health Insurance Entitlement, and Provider of Services for a 20 percent sample of Medicare beneficiaries. Supplemental sources of data include publications prepared by the National Center for Health Statistics, the American Hospital Association, the Health Resources Administration, and others. A description of the inpatient stay record file is given in Appendix A.

2. Analytic Variables

Statistical variables presented in this report permit comparison of Medicare hospital utilization by beneficiary characteristics for the 10-year period. The use of hospital care is measured by the annual total-days-of-care (TDOC) rate, the annual discharge rate, the average length of hospital stay (ALOS), the number of persons served, and the number of persons served with multiple stays. The cost of delivering hospital care and services to the aged Medicare beneficiaries is measured by total charges and amounts reimbursed, and by mean charges and reimbursements per discharge and per day. In addition, hospital use and costs were examined for various subsamples of interest where the data were partitioned according to the demographic characteristics of the patients discharged, patients' places of residence, characteristics of the hospitals, primary diagnoses, primary surgical procedures performed, and discharge status at the time of discharge.

3. Data Limitations

Three types of data limitations affect the tabulations shown in this report: sampling variability, reliability of diagnostic data, and administrative and data processing lags.

The figures in this report are based on short-stay hospital discharge records contained in the 20 percent sample file. Therefore, the data are subject to sampling variability. (See Appendix B for a description of the sampling variability.)

The diagnostic information recorded on the sample discharge records was coded centrally in HCFA and was based on the diagnostic classifications in the Eighth Revision International Classification of Diseases, Adapted for Use by the Health Care Financing Administration (ICDA-8). The diagnostic classes correspond to the broad ICDA classes and to 29 selected leading categories of diagnoses within these classes.

The National Academy of Sciences, Institute of Medicine, conducted a study to evaluate the reliability of the primary hospital discharge diagnoses appearing in the Medicare statistical system. In that study, the diagnosis on the discharge record was compared with a diagnosis reabstracted from the hospital medical record. In about 36 percent of the cases studied, the primary diagnosis from the two sources differed. An earlier study of diagnostic data collected by private abstracting services (PAS, HUP, CHDC, and QUEST) showed disagreement in about 30 percent of the cases. This indicates that the data pertaining to the 29 leading diagnoses should be used with caution. However, the aggregate diagnostic data associated with the broad ICDA classes are more reliable.

Perhaps the most important data limitation to be considered is the adjustment to the annual discharge record counts to compensate for the incompleteness of the file. Because there is a time lag—both administrative and technical in nature—between discharge and

posting, discharges recorded 24 months after each reporting year shown in this report were not included in the annual file. As a result, each annual file was missing an estimated 2 to 8 percent of the total expected number of discharge records.

To adjust for this shortfall, the annual discharge record counts were projected up to the annual discharge bill control counts (maintained by HCFA) in order to provide a "complete" tabulation of all aged HI discharges for each year in the study. This procedure assumes that the adjustment for the short-fall is randomly distributed across all variables and that the inflation of the discharge record counts would produce only a negligible bias in the estimates. (See Appendix B for a description of this adjustment process.)

In addition to the limitations associated with the file, the reader should keep in mind that tables in this report reflect both fiscal and calendar reporting years and both interim and final Medicare HI program expenditures. The figures on national and Medicare expenditures shown in Tables 1 through 4 of this report are based on fiscal year data. The Medicare enrollment, provider, utilization, and expenditure data presented in Tables 5 through 25 are on a calendar year basis. The Medicare expenditures shown in Table 3 represent total amounts reimbursed (interim plus retroactive end-of-year adjustments) while the Medicare expenditure data presented in Table 8 represents interim payments only. Both interim and retroactive end-of-year adjustments are shown in Table 15. Therefore, caution should be exercised in comparing data from these tables.

F. Key Findings

The data in this report reveal many relationships and trends in the use and cost of short-stay hospital services during the first 10 years of the Medicare HI program. The highlights are summarized in this section.

1. The Growth of Health Care and Hospital Care Expenditures

During the period from 1967 to 1976 the rate of growth in national health expenditures exceeded the growth rate of the gross national product (GNP). In FY 1967, total health expenditures of $47.9 billion accounted for 6.2 percent of the GNP; by FY 1976, the health care share had grown to 8.7 percent of the GNP, or $141.0 billion.

Expenditures for hospital services comprised a growing portion of health care spending. In FY 1967, hospital care expenditures totaled $16.4 billion or 40 percent of all personal health care expenditures. By FY 1976, $54.9 billion or 45.8 percent of all personal health expenditures went for hospital care services.

The Medicare program is paying a higher proportion of the hospital bills for the aged. In FY 1967, about $3.7 billion was spent on hospital care for persons 65 and over. Of this amount the Medicare HI program paid $2.4 billion, or 65.0 percent. in FY 1976, hospital care expenditures for the aged were $15.2 billion; the Medicare program paid $11.2 billion or about 73 percent of all hospital care expenditures for the aged.

Throughout the first 10 years of Medicare, inpatient short-stay hospital care accounted for about 95 percent of Medicare HI (Part A) expenditures.

2. Medicare HI Enrollment and Participating Short-Stay Hospitals

With the inception of Medicare, about 19.1 million aged persons were eligible for HI benefits. By July 1976, the aged HI enrolled population had reached 22.9 million, and by 1983, it is estimated that the HI enrolled population will reach 25.4 million.

In 1967, the median age of HI beneficiaries was 72.7 years with 17.8 percent over 80 years of age. By 1976, the median age rose to 73.0 years with 21.2 percent over 80. It is projected that by 1983, at least 22.3 percent of the aged HI population will be 80 and over.

The trend towards a larger and older HI popultation suggests large increases in hospital expenditures in the future. It is projected that by 1983, total HI inpatient hospital expenditures for aged beneficiaries will amount to approximately $30 billion, or roughly 2.5 times the amount expended in FY 1976.

Between 1967 and 1976, the number of participating short-stay hospitals decreased from 6,299 to 6,168. On the other hand, the number of certified beds increased by about 167,000 to 946,500, raising the average size of the participating hospitals to 153 beds (up from 124 beds).

The increase in the ratio of certified hospital beds per 1,000 U.S. population (from 3.9 in 1967 to 4.4 in 1976) and the corresponding drop in the national occupancy rate over the 10-year period indicates a pattern of unused bed capacity that contributes to higher unit costs as fixed overhead costs are allocated to fewer patients per bed day.

3. Utilization and Reimbursement Trends

The increase in the ration of certified hospital beds per 1,000 U.S. population (from 3.9 in 1967 to 4.4 in 1976) and the corresponding drop in the national occupancy rate over the 10-year period indicates a pattern of unused about 11 percent in the discharge rate per 1,000 beneficiaries and 12 percent in average length of stay (ALOS). The increase in the use of short-stay hospitals by aged HI beneficiaries during the transition period was substantially larger for persons aged 75 and over, for all minority races combined (all other races), for residents in the South, and for persons residing in urban areas.

The number of aged HI discharges from short-stay hospitals increased from 5.2 million in 1967 to 7.6 million in 1976. During the same period, the average length of stay declined from 13.8 to 11.1 days. As a result, total days of care increased from 72.1 million in 1967 to 84.4 million in 1976.

The TDOC rate showed a slight drop from 3,701 per 1,000 beneficiaries in 1967 to 3,684 per 1,000 beneficiaries in 1976. The rise in the discharge rate per 1,000 beneficiaries—from 268 to 332—was more than offset by the decrease in ALOS.

Total HI short-stay hospital interim reimbursements for the aged nearly quadrupled between 1967 and 1976, going from $2.8 billion to $10.6 billion. The mean reimbursement per discharge rose from $528 to $1,392. The mean reimbursement per day more than tripled, going from $38 to $125.

The increase in Medicare short-stay hospital reimbursements for the aged between 1967 and 1976 was primarily a function of the increased cost of hospital care as measured by reimbursement per day. The average annual increase in the reimbursement per day (14 percent) accounted for approximately 88 percent of the

average annual increase in total short-stay reimbursement (16 percent). The remainder of the increase was due to the increased HI enrollment during this period and, consequently, a greater number of days of care were used by the aged.

The increase in the hospital cost per day between 1967 and 1976 was due primarily to inflation and the increase in the number and technical complexity of services performed.

4. Hospital Charges and Patient Out-of-Pocket Expenses

Total hospital charges for services to aged HI beneficiaries discharged from short-stay hospitals increased faster than reimbursable costs. Charges quadrupled during the first 10 years of Medicare, going from $3.5 billion in 1967 to $14.3 billion in 1976. During this period, the mean charge per discharge rose from $675 in 1967 to $1,875 in 1976 while the mean charge per day increased from $49 to $169, respectively. The mean charges per day escalated at a faster rate than the mean charge per discharge due principally to the decline in ALOS and the increase in the proportion of ancillary charges to total charges.

In 1967, $0.3 billion or 9 percent of the $3.5 billion hospital charges to the aged were non-recoverable, that is, represented charges for which neither the beneficiary nor the Medicare program was liable. Since Medicare reimbursement is geared to estimated hospital costs for services to the aged, the non-recoverable charges correspond roughly to the difference between hospital charges and hospital costs for those services. By 1976, non-recoverable charges had risen to $2.3 billion or 16.4 percent of total charges.

Over the 10-year period, Medicare reimbursements (interim plus end-of-year adjustments) as a percentage of total hospital charges to the aged fell from 81.4 percent in 1967 to 76.9 percent in 1976. Principally, this represents changes in hospital charging practices rather than changes in Medicare reimbursement policies.

In 1967, for aged HI beneficiaries, the out-of-pocket expenses were $342 million or 9.7 percent of hospital charges, and by 1976 the patient liability was $944 million or 6.6 percent of total charges. The decline in patient liability relative to total hospital charges was due principally to the decline in the percentage of charges for non-covered services, from 4.0 percent ($141 million) in 1967 to 1.7 percent ($236 million) in 1976.

Between 1967 and 1976, the average out-of-pocket liability of persons hospitalized during the year increased from $91 to $181.

5. Relationship of Patient Characteristics to Hospital Utilization and Charges

Measuring hospital use in TDOC per 1,000 beneficiaries, men had greater hospital care use than women in 1967 (3,844 versus 3,596); this difference did not change appreciably over the 10-year period. The average charge per discharge and charge per day for men also were higher than those same charges for women. In 1976, the charge per discharge was $1,939 for men and $1,824 for women; the charge per day was $180 and $161, respectively.

Hospital use by whites was greater than that by persons of other races, although the difference between the races narrowed between 1967 and 1976. In 1967, whites received 3,750 days of care per 1,000 beneficiaries compared to 2,927 for other races. By 1976, this difference had narrowed to 3,717 for whites and 3,398 for other races. On the other hand, the mean charge per discharge was higher for non-whites in both years, reflecting in part, differences in ALOS per discharge. In 1967 the mean charge per discharge was $678 for non-whites compared to $672 for whites. The ALOS per discharge in 1967 was 14.9 days for non-whites and 13.6 days for whites. In 1976, the mean charges per discharge were $2,117 and $1,856 for non-whites and whites, respectively; the ALOS per discharge in 1976 was 12.4 days and 11.0 days, respectively.

While variation in hospital use by age was most pronounced, differences in use by age decreased over the study period. In 1976, the TDOC rate per 1,000 beneficiaries in the 65 to 66 age category was only 2,574 compared to 6,097 in the 85 and over age group—a difference of 137 percent. By 1976, the difference in the TDOC rate had narrowed, ranging from 2,672 to 5,484—a difference of 105 percent.

6. Relationship of Hospital Characteristics to Hospital Use and Charges

Voluntary non-profit hospitals provided inpatient health care to an estimated 5.3 million patients, or about 70 percent of all aged HI discharges during 1976. Hospitals operated by State and local governments provided care to approximately 1.6 million patients or about 21 percent of the aged HI discharges, and proprietary hospitals provided care to about 0.7 million patients, or about 9 percent. These proportions are similar to those that prevailed in 1967.

Between 1967 and 1976 there was a trend towards increased use of larger hospitals by aged Medicare beneficiaries. In 1967, 38 percent of the discharges were from hospitals with more than 250 beds. By 1976, close to 50 percent of the discharges were from this group of hospitals.

The average length of stay (ALOS) per discharge increased with hospital size. In 1967 the ALOS ranged from 12.4 days for hospitals with less than 100 beds to 16.2 days for hospitals with 500 or more beds. In keeping with the general decline in ALOS, by 1976 the ALOS ranged from 9.1 to 12.8 days, respectively.

Hospital charges increased with hospital size. In 1967, the mean charge per discharge ranged from $474 for hospitals with less than 100 beds to $953 per discharge in hospitals with 500 or more beds. By 1976, the mean charge per discharge had escalated to $1,135 for the small hospitals and $2,565 for the large hospitals.

7. Regional Differences in Hospital Use and Charges

Despite changes and differences in the discharge rate and ALOS during the 1967-1976 period, the ranking of the TDOC rates among the four U.S. Census regions remained the same over this period. The North Central region was highest, followed by the Northeast, the South, and the West.

The Northeast had the largest increase (11 percent) in the TDOC rate between 1967 and 1976, from 3,621 per 1,000 beneficiaries to 4,014. This was a combined effect

of the Northeast consistently being ranked first in ALOS and also having the highest percentage increase (32 percent) in the discharge rate per 1,000 beneficiaries. By 1976, the TDOC rate for the Northeast was almost as high as the rate in the highest ranking area, the North Central region (4,014 and 4,027, respectively).

The South also registered an increase in the TDOC rate over the 10-year study period, from 3,599 per 1,000 beneficiaries to 3,692, a gain of 2.6 percent.

Although the North Central region maintained the highest TDOC rate over the study period, the rate dropped 3.6 percent—from 4,177 per 1,000 beneficiaries to 4,027.

The West had the largest decline in the TDOC rate between 1967 and 1976 (14.2 percent)—from 3,271 per 1,000 beneficiaries to 2,808.

Hospital charges per discharge varied considerably among the four regions, but the rankings have remained the same over the ten-year period. In 1976, the Northeast had the highest charge per discharge ($2,507), followed by the West ($1,956), the North Central ($1,787), and the South ($1,520). In 1967, the figures were $884, $706, $662, and $531, respectively.

8. Surgery in Short-Stay Hospitals

Between 1967 and 1976, the proportion of aged HI discharges with surgery remained fairly constant at 31 to 32 percent of all discharges. However, the surgical rate per 1,000 HI beneficiaries rose from 85 in 1967 to 105 in 1976, reflecting the fact that the aged HI discharges increased faster than the aged HI enrollment population during the study period.

The estimated proportion of aged HI discharges with surgery varied across patient and hospital characteristics, but these relationships did not change during the 1967-1976 period. In 1976, the proportion of discharges with surgery was higher for men (34.2 percent) than women (29.6 percent), was higher for whites (31.9 percent) than non-whites (27.7 percent), decreased with age, and was higher for hospitals with over 500 beds (40.0 percent) than for hospitals with fewer than 100 beds (17.1 percent).

The proportion of discharges with surgery differed among the four geographical regions. In 1976 the proportion of discharges with surgery was highest in the Northeast (35.4 percent), followed by the North Central (31.9 percent), the West (31.2 percent), and the South (29.2 percent).

9. Hospital Utilization and Reimbursement by Person

In 1976, for approximately nine percent of all persons discharged from short-stay hospitals, reimbursements were $5,000 or more and accounted for about 36 percent of the total HI funds expended. In contrast, for 22 percent of the persons, reimbursements were less than $500 each and accounted for only three percent of the total reimbursements. For about one percent of the aged persons discharged from short-stay hospitals,no reimbursement was made.

Of the estimated 5.2 million aged persons discharged from short-stay hospitals in 1976, 70.5 percent had one hospital stay, 19.8 percent had two stays, and 9.7 percent had three or more stays. These 5.2 million persons accounted for about 7.6 million discharges, or an average of 1.45 discharges per person.

Between 1967 and 1976, the proportion of persons with two or more stays increased from 25.4 to 29.5 percent.

10. Deaths in Short-Stay Hospitals

The proportion of aged Medicare discharges that ended with the death of the patient decreased between 1967 and 1976. Deaths per 100 discharges declined from 9.8 in 1967 to 6.9 in 1976.

The proportion of discharges ending with the death of the patient was greater for discharges without surgery than for those with surgery. Deaths per 100 discharges of patients with surgery dropped from 5.3 in 1967 to 3.6 in 1976; for non-surgical discharges, the proportion dropped from 12.0 to 8.5 per 100.

II. The Health Care Industry in the United States: The Medicare Program in Perspective

The health care industry is one of the fastest growing industries in the United States today. It consists of a variety of institutions, organizations, and personnel that render a wide range of medical services. These services are financed through a combination of payments by consumers, spending by philanthropic institutions, funds from private industry, and third-party payers (government and private health insurance). The growing importance of third-party payers has been a marked feature of the period since 1967.

In 1976, the industry included about 34,000 inpatient facilities (hospitals, nursing and related homes, and other inpatient facilities) with nearly 3.2 million beds. Hospitals, both short and long-term, accounted for about 22 percent of all inpatient facilities, 58 percent of all employees and 44 percent of all beds. Of the 343, 000 physicians practicing in 1976, an estimated 91 percent were involved in direct patient care, and close to 33 percent of these were in hospital-based practices (Health, United States, 1978).

A. Trends in National Health Expenditures[2]

The upward trend in health care expenditures in the United States in recent years is well known. In fiscal year (FY) 1976, national health expenditures reached $141.0 billion—nearly three times the amount spent in 1967 and about 12 times the amount spent in 1950 (Table 1). On an annual basis, between FYs 1967 and 1976, national health expenditures have increased by an average of about 13 percent per year. Average per capita health care expenditures in 1976 were $646—2.7 times the average in 1967 and over 8 times the average in 1950.

Not only has health care spending grown in absolute terms, its rate of growth has exceeded that of other sectors of the economy. In FY 1950, health care expenditures represented about 4.5 percent of the gross national product (GNP); by 1976, the proportion had nearly doubled to 8.7 percent. The sharpest increase occurred between 1974 and 1976 when health expenditures rose by 33 percent and GNP increased by only 18 percent. During the 1971-1974 period when medical prices were controlled under the economic stabilization program

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[2]The national health care expenditure trend data (including Medicare reimbursements) shown in Tables 1 through 4 of this report are presented on a fiscal year basis.

TABLE 1

Aggregate and Per Capita National Health Expenditures (NHE), by Source of Funds and Percent of Gross National Product (GNP), Selected Fiscal Years, 1935-1976

Year	Total[1]			Private[2]			Public[3]		
	Amount (in millions)	Per Capita	Percent of GNP	Amount (in millions)	Per Capita	Percent of NHE	Amount (in millions)	Per Capita	Percent of NHE
1935	$ 2,846	$ 22	4.1	$ 2,303	$ 18	80.9	$ 543	$ 4	18.1
1950	12,027	78	4.5	8,962	58	74.5	3,065	20	25.5
1965	38,892	198	5.9	29,357	149	75.5	9,535	48	24.5
1966	42,109	212	5.8	31,279	157	74.3	10,830	54	25.7
1967	47,897	238	6.2	32,026	159	66.9	15,853	79	33.1
1968	53,765	264	6.5	33,725	166	62.7	20,040	99	37.3
1969	60,617	295	6.7	37,680	184	62.2	22,937	112	37.8
1970	69,201	334	7.2	43,810	211	63.3	25,391	122	36.7
1971	77,162	368	7.6	48,387	231	62.7	28,775	137	37.3
1972	86,687	410	7.8	53,214	252	61.4	33,473	158	38.6
1973	95,383	447	7.7	58,715	275	61.6	36,668	172	38.4
1974	106,321	495	7.8	64,809	302	61.0	41,512	193	39.0
1975[4]	123,716	571	8.5	71,348	329	57.7	52,368	342	42.3
1976[4]	141,013	646	8.7	80,831	370	57.3	60,182	276	42.7

[1]Includes amounts spent for personal health care, prepayment (differences between the premiums and benefit payments) and health activities, and research and medical facilities construction.

[2]Represents direct payment for health services by individuals, plus health insurance benefits paid by private health insurance, spending by philanthropic organizations, industrial inplant services and privately financed construction.

[3]All expenditures for health care that are channeled through any program established by public law.

[4]Revised estimates.

SOURCE: Division of National Cost Estimates, Office of Financial and Actuarial Analysis.

(ESP), the proportion of GNP represented by health care expenditures remained fairly constant at about 7.7 percent.

B. Hospital Care Expenditures

As shown in Table 2, hospital care expenditures accounted for a major and increasing share of personal health care spending in the United States from FY 1967 through FY 1976. Expenditures for hospital care more than tripled, going from $16.4 billion (40.2 percent) in FY 1967 to $54.9 billion (45.8 percent) in FY 1976. During the same period, per capita hospital care expenditures tripled, going from $81 to $251 (see resident population figures contained in Statistical Abstract of the U.S., 1977).

Of the $54.9 billion spent in the United States for hospital care during FY 1976, $15.2 billion was expended for persons aged 65 and over. Expenditures for hospital care accounted for 44.4 percent of the total health care bill for the aged ($34.3 billion). The average per capita hospital expenditure for aged persons was $665, or about 2.7 times the amount for all persons.

Estimated Per Capita Personal Hospital Care Expenditures for All Persons and Persons 65 and Over, Fiscal Years 1967-1976

Year	All Ages	65 and over	Ratio
1967	$81	$190	2.3
1968	93	246	2.6
1969	106	302	2.8
1970	120	324	2.7
1971	134	366	2.7
1972	150	417	2.8
1973	164	446	2.7
1974	192	492	2.6
1975	222	591	2.7
1976	251	665	2.7

C. Public and Private Sources of Payment

Since FY 1966, the year preceding the start of the Medicare and Medicaid programs, the proportion of the total health care bill financed by public spending increased from 26 percent to about 43 percent in 1976; public funds paid $60.2 billion of the total health care bill ($141.0 billion) in FY 1976. On a per capita basis, public health expenditures increased from $54 in FY 1966 to $276 in FY 1976, or about 5 times; private expenditures increased from $157 to $370, or about 2.4 times (Table 1).

TABLE 2

Estimated Personal Health Care Expenditures for All Ages, Under Age 65, and 65 and Over, by Type of Expenditure, Fiscal Years 1967-1976

Year	All Ages			Under Age 65			Aged 65 and Over		
	Total[1]	Hospital Care[2]	All Other[3]	Total[1]	Hospital Care[2]	All Other[3]	Total[1]	Hospital Care[2]	All Other[3]
	Amount (in millions)								
1967	$ 40,856	$16,434	$24,422	$31,302	$12,725	$18,577	$ 9,554	$ 3,709	$ 5,845
1968	45,973	18,836	27,137	34,159	13,976	20,183	11,814	4,860	6,954
1969	52,188	21,854	30,334	38,348	15,806	22,542	13,840	6,048	7,792
1970	59,226	24,992	34,234	43,599	18,400	25,199	15,627	6,592	9,035
1971	66,232	28,137	38,095	48,213	20,538	27,675	18,019	7,599	10,420
1972	73,684	31,716	41,968	53,039	22,904	30,135	20,645	8,812	11,833
1973	80,632	34,947	45,685	57,982	25,322	32,660	22,650	9,625	13,025
1974	91,574	41,279	50,295	67,136	30,450	36,686	24,438	10,829	13,609
1975	105,520	47,999	57,521	75,913	34,710	41,203	29,607	13,289	16,318
1976	119,905	54,874	65,031	85,578	39,625	45,953	34,327	15,249	19,078
	Percent Distribution								
1967	100.0	40.2	59.8	100.0	40.7	59.3	100.0	38.8	61.2
1968	100.0	41.0	59.0	100.0	40.9	59.1	100.0	41.1	58.9
1969	100.0	41.9	58.1	100.0	41.2	58.8	100.0	43.7	56.3
1970	100.0	42.2	57.8	100.0	42.2	57.8	100.0	42.2	57.8
1971	100.0	42.5	57.5	100.0	42.6	57.4	100.0	42.2	57.8
1972	100.0	43.0	57.0	100.0	43.2	56.8	100.0	42.7	57.3
1973	100.0	43.3	56.7	100.0	43.7	56.3	100.0	42.5	57.5
1974	100.0	45.1	54.9	100.0	45.4	54.6	100.0	44.3	55.7
1975	100.0	45.5	54.5	100.0	45.7	54.3	100.0	44.9	55.1
1976	100.0	45.8	54.2	100.0	46.3	53.7	100.0	44.4	55.6

[1]Represents health services and supplies received directly by individuals. Excludes expenditures for prepayment and administration, government public health activities, and research and medical facilities construction.

[2]Represents all spending for hospital services for both inpatient and outpatient care, including all services by hospital staff and spending for drugs and other supplies.

[3]Represents expenditures for nursing home care, services of physicians, dentists, other professional health services, drugs and drug sundries (outpatient), eyeglasses and orthopedic appliances, and other health services.

SOURCE: Division of National Cost Estimates, Office of Financial and Actuarial Analysis.

In the area of hospital care for the aged, public funds have played an even greater role in paying the bill since 1966. In FY 1966, public funds paid 49 percent of the nation's hospital bill for the aged (Compendium of National Health Expenditure Data, 1976). As shown in Table 3, in the first year of the Medicare and Medicaid programs (fiscal year 1967), public funds accounted for about 84 percent of all hospital expenses for the aged; Medicare alone funded 65 percent. By FY 1976, $13.4 billion or 88 percent of the $15.2 billion in hospital care expenditures for the aged were financed by public funds. Medicare paid $11.2 billion or about 73 percent of the total hospital expenditures for the aged in FY 1976 and Medicaid and other public sources funded about $2.2 billion or 15 percent of the hospital expenditures for the aged. Private payments accounted for the remaining 12 percent of hospital care expenditures for the aged in FY 1976.

D. Total Medicare Expenditures and Short-Stay Hospital Reimbursements

Total expenditures (including retroactive reimbursements) by the Medicare program for the aged were $14.9 billion in FY 1976. Of this amount, 74 percent or $11.0 billion was for HI (Part A) and 26 percent ($3.9 billion) was for SMI (Part B) services.[3] Except for the first two years of operation, when numerous administrative and processing delays occurred, these proportions have remained stable. Table 4 shows the breakdown of interim expenditures for the various services under the HI program. Reimbursements for short-stay hospital services for the aged—the focus of this report—have, since 1972, accounted for about 95 percent of reimbursement under the Medicare HI program, with the remaining 5 percent paying for services by long-term hospitals, skilled nursing facilities, and home health agencies.

[3]Based on HCFA internal tabulations, current utilization series.

TABLE 3

Estimated Amount and Percentage Distribution of Personal Hospital Care Expenditures for the Aged 65 and Over, by Source of Funds, Fiscal years 1967-1976

Year	Total	Source of Funds			
		Private	Public		
			Total	Medicare[1]	Other[2]
		Amount (in millions)			
1967	$ 3,709	$ 582	$ 3,127	$ 2,411	$ 716
1968	4,860	710	4,150	3,404	746
1969	6,048	810	5,238	4,358	880
1970	6,592	822	5,770	4,644	1,126
1971	7,599	950	6,649	5,476	1,173
1972	8,812	1,101	7,711	6,204	1,507
1973	9,652	1,207	8,445	6,757	1,688
1974	10,829	1,353	9,476	7,622	1,854
1975	13,289	1,670	11,619	9,545	2,074
1976	15,249	1,846	13,403	11,182	2,221
		Percentage Distribution			
1967	100.0	15.7	84.3	65.0	19.3
1968	100.0	14.6	85.4	70.0	15.3
1969	100.0	13.4	86.6	72.1	14.6
1970	100.0	12.5	87.5	70.4	17.1
1971	100.0	12.5	87.5	72.1	15.4
1972	100.0	12.5	87.5	70.4	17.1
1973	100.0	12.5	87.5	70.0	17.5
1974	100.0	12.5	87.5	70.4	17.1
1975	100.0	12.6	87.4	71.8	15.6
1976	100.0	12.1	87.9	73.3	14.6

[1]Includes Part B outpatient hospital expenditures covered under Supplementary Medical Insurance (SMI) and retroactive hospital care expenditures.

[2]Includes Medicaid (public assistance vendor medical payments) and other public programs, primarily State and local hospital programs and those of the Veterans Administration.

SOURCE: Division of National Cost Estimates, Office of Financial and Actuarial Analysis.

E. Summary

National health expenditures have increased rapidly since the passage of the 1965 Amendments to the Social Security Act which created the Medicare and Medicaid programs. In FY 1976, national health expenditures reached $141 billion, or about 8.7 percent of the GNP and nearly twice the proportion recorded in 1950. Correspondingly, hospital care expenditures have accounted for a major and increasing share of health care spending in the United States. In FY 1976, hospital care expenditures totaled $54.9 billion, or about 46 percent of the nation's health care bill. Of this amount, $15.2 billion was expended for persons aged 65 and over.

As intended, the Federal health insurance legislation of 1965 had the effect of shifting a large portion of the health care bill for the aged from the private to the public sector. In the area of hospital care for the aged, the public share increased from 49 percent in FY 1966 (the year prior to the start-up of the Medicare and Medicaid programs) to 84 percent in FY 1967. By 1976, $13.4 billion or 88 percent of the $15.2 billion in hospital care expenditures for the aged were financed by public funds (Table 3). Medicare, alone, financed $11.2 billion or about 73 percent of the total hospital care expenditures in FY 1976. Of this total, approximately $10.4 billion were paid out for short-stay hospital expenditures for the aged—the focus of this report.

III. Enrollment in the Medicare Hospital Insurance (HI) Program

A. Growth in the Aged Hospital Insurance (HI) Population

When the Medicare program began operations on July 1, 1966, nearly all persons aged 65 and over—about 19.1 million—were eligible for HI benefits (Table 5). Nearly half of these aged persons had no previous hospital insurance protection (Pettengil 1972). By July 1976, the aged population enrolled in HI had reached 22.9 million; by July 1983, HCFA's Office of Financial and Actuarial Analysis (OFAA) projects that the aged HI population will reach 25.4 million.

Overall, from July 1967 to July 1976, the HI enrolled aged population increased about 18 percent while the total population of the United States rose only 9 percent. In 1976, the aged HI population accounted for about 10.7 percent of the total population; by 1983, OFAA projects that this proportion wil rise to 11.5 percent.

TABLE 4

Amounts Reimbursed for Aged Medicare Beneficiaries Utilizing Hospital Insurance (HI) Services, Fiscal Years 1967-1976

Year	Amount Reimbursed (in millions)[1]						Percent Distribution					
		Hospital[2]			Post-Hospital			Hospital[2]			Post-Hospital	
	Total HI	Total	Short-Stay	Long-Stay	Skilled Nursing Facility	Home Health[3]	Total HI	Total	Short-Stay	Long-Stay	Skilled Nursing Facility	Home Health[3]
1967	$ 2,315	$ 2,209	$2,162	$ 47	$ 95	$ 11	100.0	95.4	93.4	2.0	4.1	0.5
1968	3,404	3,080	3,023	57	295	29	100.0	90.5	88.8	1.7	8.7	0.9
1969	4,106	3,735	3,667	68	330	41	100.0	91.0	89.3	1.7	8.0	1.0
1970	4,610	4,285	4,212	73	275	50	100.0	93.0	91.4	1.6	6.0	1.1
1971	5,117	4,872	4,793	79	202	43	100.0	95.2	93.7	1.5	3.9	0.8
1972	5,625	5,415	5,325	90	166	44	100.0	96.3	94.7	1.6	3.0	0.8
1973	6,179	5,958	5,861	97	167	54	100.0	96.4	94.8	1.6	2.7	0.9
1974	6,987	6,699	6,586	113	217	71	100.0	95.9	94.3	1.6	3.1	1.0
1975	8,541	8,194	8,062	132	236	111	100.0	95.9	94.4	1.5	2.8	1.3
1976	10,515	10,086	9,942	144	268	161	100.0	95.9	94.5	1.4	2.5	1.5

[1]Represents amounts reimbursed on an interim basis by the HI program.

[2]Beginning April 1968, outpatient hospital diagnostic services, formerly covered under HI were covered under Supplementary Medical Insurance (SMI).

[3]Excludes Home Health Agency (HHA) Part B services covered under SMI.

SOURCE: National Medicare Statistical System—Current Utilization Series Tabulations.

TABLE 5

Number and Percentage Distribution of Aged Medicare Hospital Insurance (HI) Beneficiaries, by Demographic Characteristics and Region, 1967 and 1976

Demographic Characteristics and Region	1967		1976		Percent Change 1967-1976
	Number (in thousands)	Percent	Number (in thousands)	Percent	
Total Beneficiaries	19,494	100.0	22,920	100.0	17.6
Sex					
Men	8,243	42.3	9,324	40.7	13.1
Women	11,251	57.7	13,596	59.3	20.8
Age					
65-66	2,765	14.2	3,216	14.0	16.3
67-68	2,587	13.3	3,044	13.3	17.7
69-70	2,427	12.5	2,738	11.9	12.8
71-72	2,272	11.7	2,466	10.8	8.5
73-74	2,064	10.6	2,226	9.7	7.8
75-79	3,904	20.0	4,365	19.0	11.8
80-84	2,211	11.3	2,898	12.6	31.1
85 and over	1,263	6.5	1,966	8.6	55.7
Race[1]					
White	17,385	89.2	20,382	88.9	17.2
All Other	1,496	7.7	1,916	8.4	28.1
Region[2]					
Northeast	5,082	26.1	5,576	24.3	9.7
North Central	5,621	28.8	6,183	27.0	10.0
South	5,584	28.6	7,090	30.9	27.0
West	2,893	14.8	3,632	15.8	25.5

[1]Excludes unknown race.

[2]Excludes Puerto Rico, Virgin Islands, and other HI beneficiaries residing outside the 50 States, and the District of Columbia.

SOURCE: Office of Research, "Medicare: HI for the Aged, Section 2, Enrollment, 1967," and the annual update for 1976.

B. Demographic Characteristics

In 1967, the median age of all HI beneficiaries was 72.7 years, with 17.8 percent of the population over 80 years of age. By 1976 the median age of all HI beneficiaries rose to 73.0 years, with 21.2 percent over 80 years of age. The 80 and over age group showed, by far, the largest relative increase (about 40 percent) over the 10-year period; by 1983, OFAA projects that this age group will comprise 22.3 percent of the total HI population.

The trend towards a larger and older HI population suggests future large increases in the use and costs under Medicare since the use of medical services becomes more frequent with increasing age. For example, in 1976, beneficiaries aged 85 years and over had a TDOC rate per 1,000 beneficiaries of 5,484, which was twice the rate for the youngest group of beneficiaries; in addition, the ALOS was 2.1 days longer for the older age group.

The proportion of women enrolled in the HI program in 1967 was substantially greater than that of men, 57.7 and 42.3 percent, respectively. This reflects, in part, the difference in life expectancy between males and females; for example, in 1970 women lived, on the average, about 7.7 years longer than men. By 1976, the difference was even greater with women accounting for 59.3 percent and men for 40.7 percent of the total aged HI enrolled population.

Persons of minority races comprised only 7.7 percent of the total aged HI population in 1967; the proportion was 8.4 percent in 1976. These figures were somewhat below their relative representation in the total aged population and appear to reflect a provision of the social security law that specifies that beneficiaries must be "fully insured" to be eligible for HI benefits. Aged non-whites were less likely than aged whites to achieve an insured status under HI (Thompson, 1975).

C. Regional Growth

During the period from 1967 through 1976, the rate of growth in the aged population was highest in the South (27.0 percent) which in 1976 accounted for the largest number of HI beneficiaries (7.1 million). The West had the second highest rate of growth (25.5 percent) during this period, although their total number of HI beneficiaries (3.6 million) remained the lowest of any region.

D. Eligibility

The proportion of aged persons entitled under HI declined during the first 10 years of the program. With the start of the Medicare HI program, practically all persons aged 65 and over were entitled to HI as social security or railroad retirement beneficiaries (the bulk of those persons excluded were aliens and Federal civil service employees and annuitants). A special transitional provision of the social security law added most of the remaining aged persons. However, beginning in 1968, the social security law required that each person age 65 and over have at least 3 calendar quarters of social security coverage; by 1975, each person attaining age 65 was required to have "fully insured status"—that is, having the same number of quarters of coverage required for payments of cash benefits under the social security program (Medicare: Health Insurance for the Aged and Disabled, 1974). As a result, an estimated 1.1 million (5 percent) persons aged 65 years and over (of whom about one-fourth were Federal civil service annuitants and employees) were not covered under the Medicare HI program in 1976.[4]

The proportion of aged persons covered under Medicare HI has thus fallen despite the enactment of the 1972 social security amendments which allows those aged who are not eligible for HI benefits to enroll voluntarily in the program by paying a monthly HI premium. In 1976, only about 21,000 persons (2 percent of the non-entitled aged population) had enrolled in HI under the "premium HI coverage" provision.[5]

IV. Participating Short-Stay Hospitals

The vast majority of hospitals in the U.S. have participated in the Medicare program since its inception in 1966. All hospitals participating in the Medicare program must be in compliance with a specified set of conditions of participation (Medicare Program Regulations, 42 CFR, Part 405, Subpart S).

Short-stay hospitals account for about 90 percent of all hospitals participating in the Medicare program. Table 6 provides data on participating short-stay hospitals. During 1967, there were 6,299 participating short-stay hospitals with 779,908 certified beds, an average of 124 beds per hospital. Between 1967 and 1976, the number of short-stay hospitals participating in the Medicare program decreased by 131. On the other hand, the number of certified beds increased by about 167,000 (21 percent), raising the average size to 153 beds per hospital, an increase of 23 percent.

The number of certified Medicare beds per 1,000 U.S. population increased from 3.9 in 1967 to 4.4 in 1976. At the same time, the national occupancy rate (which indicates the extent to which hospital beds are used) for all short-stay hospitals decreased steadily from a high of 78.8 percent in 1969 to 74.4 percent in 1976 (Hospital Statistics, 1976 Annual Survey). The drop in the occupancy rate over the 10-year period indicates a pattern of unused bed capacity that contributes to higher unit costs as fixed overhead costs are allocated to fewer patients per bed-day.

Hospital data for the entire United States population show that Medicare inpatients have consistently accounted for about one-third of the total days of care for all patients discharged from short-stay hospitals during the period from 1967 to 1976. Days of care used by aged Medicare patients ranged from a low of 31.6 percent in 1971 to a high of 34.0 percent in 1968 (Hospital Statistics, 1977).

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[4]HI population estimates as prepared by the Office of Financial and Actuarial Analysis, HCFA.

[5]Based on unpublished data contained in internal HCFA tabulations.

TABLE 6

Number of Participating Short-Stay Hospitals Under Medicare, Number of Medicare Beds, Number of Medicare Beds per 1,000 U.S. Population, and National Occupancy Rates, 1967-1976

Year	Short-Stay Hospitals Under Medicare			All U.S. Short-Stay Hospitals
	Number	Number of Certified Beds	Beds Per 1,000 U.S. Population	Occupancy Rate[1]
1967	6,299	779,908	3.9	77.6
1968	6,276	780,454	3.9	78.2
1969	6,345	823,703	4.1	78.8
1970	6,332	847,838	4.1	78.0
1971	6,301	854,388	4.1	76.7
1972	6,301	877,200	4.2	75.2
1973	6,262	895,600	4.3	75.4
1974	6,257	912,731	4.3	75.3
1975	6,213	921,800	4.3	74.8
1976	6,168	946,500	4.4	74.4

[1]Source: American Hospital Association, *Hospital Statistics*, 1977 Edition, Table 1.

SOURCE: Office of Research and Statistics, "Medicare: HI for the Aged, Section 3.1: Participating Hospitals, 1972-1974," and unpublished updates for 1975 and 1976.

V. Annual Medicare Utilization Trends for Short-Stay Hospital Care

A. Measures of Use

Three primary measures are used to report short-stay hospital use by aged Medicare beneficiaries. The annual total days of care (TDOC) rate per 1,000 HI beneficiaries is the most important statistic for comparing hospital use because it measures total hospital use and therefore has direct expenditure implications. The TDOC rate is a function of the other two variables, the annual number of discharges per 1,000 HI beneficiaries and the average length of stay (ALOS). Discharge rates and ALOS may move in opposite directions; that is, ALOS can fall while the discharge rate increases as, in fact, has been happening during the study period. The relative rates of change in these measures have a significant impact on TDOC. Thus, neither ALOS nor the discharge rate alone is an adequate measure for hospital use (TDOC).

B. Initial Impact of Medicare Coverage

With the enactment of the HI program on July 30, 1965, comprehensive baseline data were needed to measure the impact of Medicare on the use of health care by the aged. A survey was conducted to estimate patterns of the use and costs of hospital services by aged persons both before and after the implementation of Medicare (Lowenstein, 1971). For short-stay hospital care, the two part-survey (April—May 1965 to April—May 1966, and November—December 1966 to November—December 1967) revealed that the most significant change occurred in the TDOC rate per 1,000 beneficiaries, which increased nearly 25 percent. The rise in total hospital use reflected an increase of an estimated 11 percent in the discharge rate per 1,000 beneficiaries and 12 percent in ALOS. The increase in the use of short-stay hospitals by aged Medicare beneficiaries during the transition period was substantially larger for persons aged 75 and over, for persons of other races, for residents in the South, and for persons residing in urban areas.

C. Utilization Trends, 1967-1976

As shown in Table 7, the rates at which hospitals were used for aged Medicare beneficiaries continued the upward trend begun during the first year of the program. Total hospital use, as measured by the TDOC rate per 1,000 beneficiaries, increased by about 6 percent, going from 3,701 in 1967 to 3,938 in 1968. This resulted from an increase of about 6 percent in the discharge rate per 1,000 beneficiaries—which rose from 269 to 285—while the ALOS remained constant at 13.8 days.

The rapid growth in the rate of hospital use by the aged population ended in 1969. The TDOC rate in 1969 was 3,947 per 1,000 beneficiaries—very close to the rate in 1968. Although the discharge rate per 1,000 beneficiaries continued to increase about 2 percent—from 285 to 292—it was offset by a decline in ALOS, which went from 13.8 to 13.5 days. The trends in these three variables over the 10-year period are illustrated in Figures 1, 2, and 3.

In 1970 a decline occurred in hospital use by aged Medicare beneficiaries; TDOC per 1,000 beneficiaries decreased from 3,947 to 3,800, or about four percent. The discharge rate remained constant at about 292 per 1,000 beneficiaries, but ALOS continued to decline, going from 13.5 to 13.0 days. A slight decline in the TDOC rate took place in 1971.

As a result of offsetting trends in the discharge rate and the ALOS per discharge, the TDOC rate per 1,000 beneficiaries stabilized in the neighborhood of 3,675 for the 1971 to 1976 period. During this period, the discharge rate per 1,000 beneficiaries increased about 13 percent—going from 294 to 332—while ALOS dropped about 11 percent, going from 12.5 to 11.1 days.

TABLE 7

Days of Care, Discharges, and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, 1967-1976

Year	Total Days		Covered Days[1]			Discharges		Average Length of Stay	
	Number (in thousands)	Per 1,000 Beneficiaries	Number (in thousands)	Per 1,000 Beneficiaries	Percent of Total Days	Number (in thousands)	Per 1,000 Beneficiaries	Total	Covered
1967	72,146	3,701	68,487	3,513	94.9	5,228	268	13.8	13.1
1968	77,846	3,938	75,589	3,823	97.1	5,641	285	13.8	13.4
1969	79,002	3,947	77,246	3,860	97.8	5,852	292	13.5	13.2
1970	77,363	3,800	75,578	3,712	97.7	5,951	292	13.0	12.7
1971	76,125	3,670	74,298	3,582	97.6	6,090	294	12.5	12.2
1972	77,198	3,656	75,284	3,565	97.5	6,380	302	12.1	11.8
1973	78,987	3,662	77,637	3,599	98.3	6,751	313	11.7	11.5
1974	80,880	3,677	79,770	3,627	98.6	7,033	320	11.5	11.2
1975	81,592	3,631	80,135	3,566	98.2	7,285	324	11.2	11.0
1976	84,438	3,684	82,916	3,618	98.2	7,607	332	11.1	10.9

[1]A day of inpatient hospital care during which services covered by Medicare and determined to be medically necessary by the Professional Standards Review Organization or the Utilization Review Committee were furnished to a person eligible for Hospital Insurance (HI) benefits.

SOURCE: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1968-1976.

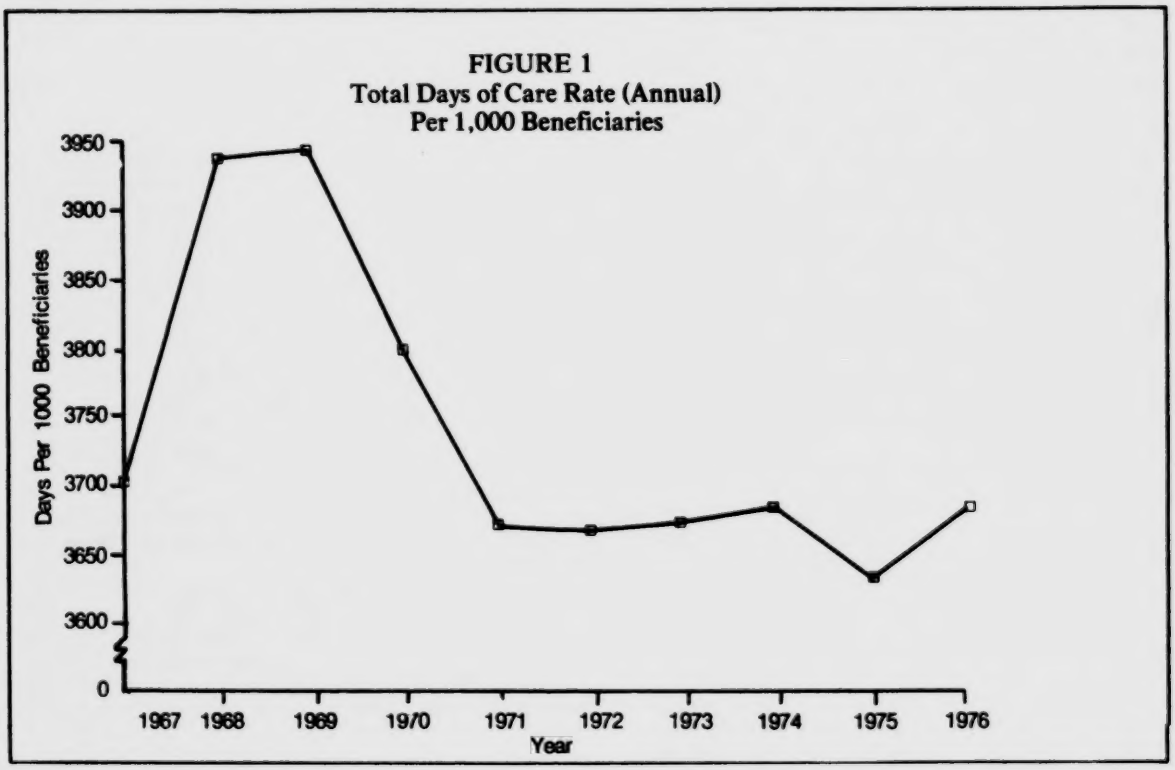


FIGURE 2
Discharge Rate (Annual)
Per 1,000 Beneficiaries

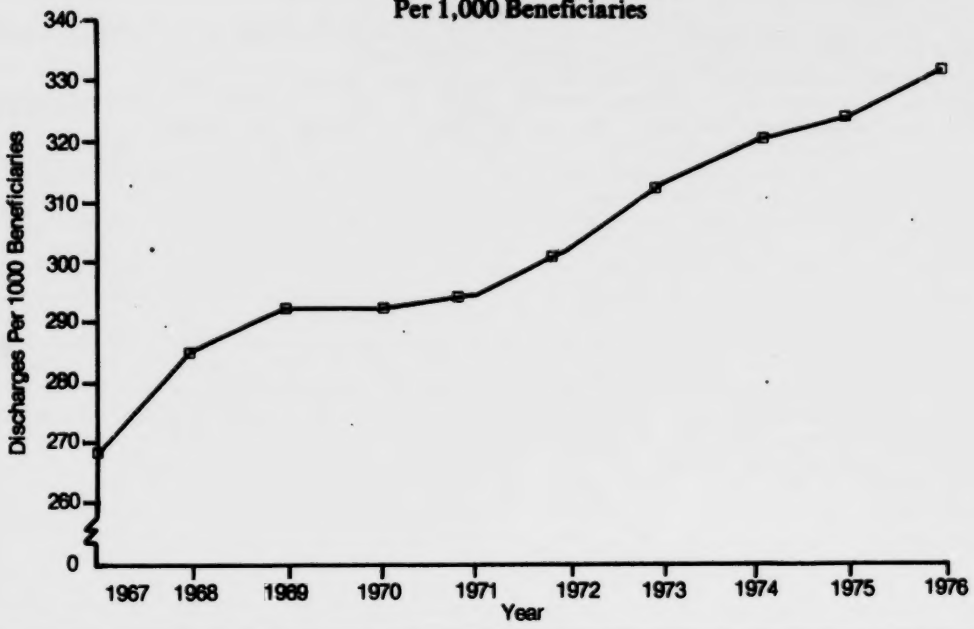
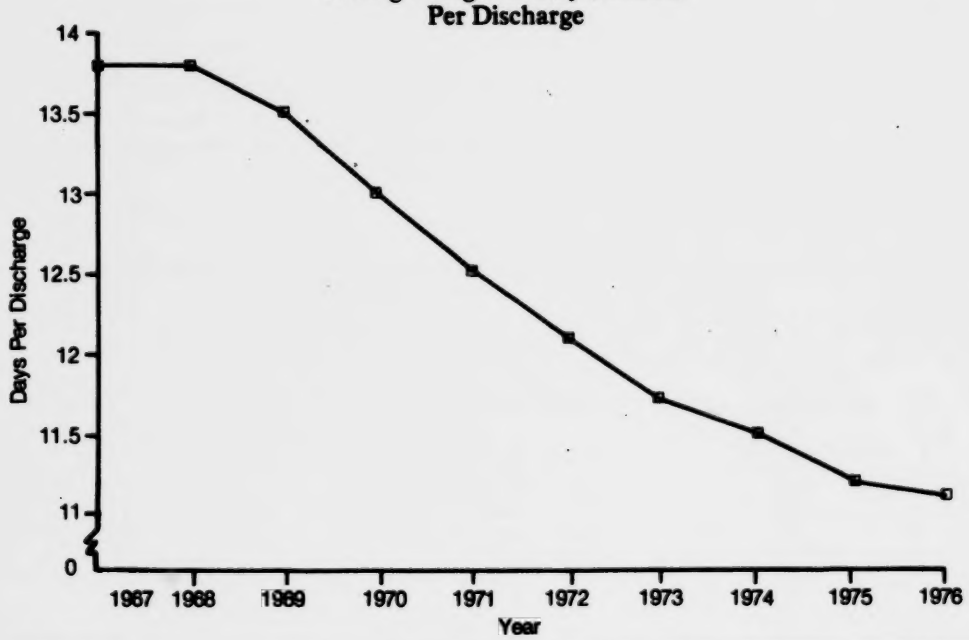


FIGURE 3
Average Length of Stay (Annual)
Per Discharge



VI. Annual Short-Stay Hospital Reimbursement Under Medicare, 1967-1976[6]

A. Reimbursement Trends, 1967-1976

During the first 10 years of the Medicare HI program, the amount expended for HI short-stay hospital services to the aged nearly quadrupled, going from $2.8 billion in 1967 to $10.6 billion in 1976 (Table 8). During this period, the average expenditure per discharge more than doubled going from $528 to $1,392, and the average expenditure per day more than tripled, going from $38 to $125. The decline in interim reimbursements as a percentage of hospital charges—from 78.2 in 1967 to 74.2 in 1976—indicates that hospital charges grew at a faster rate than reimbursable costs over the decade.

During the period 1967 to 1976, reimbursements for short-stay hospital services to the aged rose at an average annual rate of about 16 percent (Table 9). There were two exceptional years when the rate of increase was much greater than the average. In 1968, reimbursements were about 27 percent higher than in 1967, and they increased 23 percent in 1975 following the expiration of the Economic Stabilization Program (ESP) in 1974.

B. Variables Affecting Amounts Reimbursed

The amount reimbursed by Medicare for inpatient hospital use in any given year is the product of three factors:

a. the rate of utilization of hospital services (the TDOC rate);
b. the total HI enrollment; and
c. the average amount reimbursed by Medicare per day of inpatient hospital care.

The change in the amount reimbursed by Medicare is the sum of the percentage changes in each of these three factors.[7]

Table 9 shows that between 1967 and 1976, the average annual increase in the reimbursement per day (14 percent) accounted for approximately 88 percent of the average annual increase in total short-stay hospital reimbursements (16 percent). Since there was essentially no change in the short-stay hospital use rate over this period, the increase in total use is attributable to the increase in the HI enrollment during this period of time—accounting for about 12 percent of the increase in total reimbursements.

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[6]Reimbursement amounts discussed in this section represent payments under the HI program which are based on interim reimbursement rates established to reflect current costs as closely as possible, usually established as a per diem amount or on percentage of total charges. Final payments are determined following audit of cost reports.

[7]Algebraically, this relationship may be defined as:

$$R = UED$$

where:

R is the total reimbursements for short-stay hospital care.

U is the hospital use rate in days of care per 1,000 beneficiaries.

E is the HI enrollment population in thousands.

D is the amount in dollars reimbursed per day for short-stay hospital services.

The product of U × E may be perceived as representing the total use of hospital services in terms of total days of care (TDOC). D may be perceived as the unit cost to the HI program for a day of care in a short-stay hospital. The percentage change in the amounts reimbursed is equal to the sum of the percentage changes in the component factors. The change over time in each of the above factors may be represented as:

$$\frac{dR}{dt} = UE\frac{dD}{dt} + UD\frac{dE}{dt} + ED\frac{dU}{dt}$$

dividing through by R and reducing

$$\frac{dR}{R} = \frac{dD}{D} + \frac{dE}{E} + \frac{dU}{U}$$

Each term is the change in the value of the factor relative to its original value; that is, when multiplying through by 100, the percent change.

TABLE 8

Amounts Reimbursed Under Hospital Insurance (HI) for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, 1967-1976

Year	Reimbursements Under Hospital Insurance (HI)[1]			
	Amount (in millions)	Per Discharge	Per Day	Percent of Hospital Charges
1967	$ 2,760	$ 528	$ 38	78.2
1968	3,509	622	45	79.6
1969	4,085	698	52	78.3
1970	4,481	753	58	76.1
1971	5,036	827	66	75.9
1972	5,576	874	72	75.3
1973	6,245	925	79	75.5
1974	7,209	1,025	89	75.0
1975	8,859	1,216	108	74.7
1976	10,589	1,392	125	74.2

[1]Represents amounts reimbursed on an interim basis by the Medicare HI program.

SOURCE: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1968-1976.

TABLE 9

Annual Percentage Changes in Short-Stay Hospital Reimbursements, Days of Care Rates, Hospital Insurance (HI) Enrollment, and Reimbursements Per Day Under the Medicare HI Program, for Selected Years, 1967-1976

Time Period	Annual Percentage Change			
	Total Reimbursements	Total Days of Care Per 1,000 Beneficiaries	HI Enrollment	Reimbursements Per Day
1967-1976[1]	16	0	2	14
1967-1968	27	7	1	19
1974-1975	23	−1	2	22

[1]Calculated from the 1967 and 1976 figures. These data were consistent with data for some of "typical" years (i.e., 1971-1972).

Examination of the two periods of extraordinary year-to-year increases in HI reimbursements for short-stay hospital services, 1967-1968 and 1974-1975, shows the increasing significance of unit costs (measured in this report as reimbursement per day) on the rise in total HI reimbursements for short-stay hospital services. For the period 1967-1968, the larger than average annual increase (19 percent) in the cost per day of inpatient hospital care was coupled with a relatively large annual increase (seven percent) in use and a slight increase (one percent) in the HI enrollment population. Thus, the proportion of the 1967-1968 increase attributable to the per diem cost was less than the average for the ten-year study period (70 percent compared to 88 percent), while the proportion due to an increased rate of use was about 26 percent. The increases in these factors resulted in total annual HI expenditures increasing about 27 percent, the largest during the decade. By contrast, nearly 96 percent of the increase in Medicare reimbursements for short-stay hospital care to the aged between 1974 and 1975 was attributable to the increase in per diem costs (22 percent); total use decreased about one percent.

The increase between 1967 and 1976 in the cost of a day of care in a short-stay hospital was not due solely to price inflation. Over this ten-year period, there were changes in the practice of medicine—in some areas, quite dramatic changes. Accompanying these changes were changes in the amounts and combinations of the relevant production factors that go to produce an "average" day of hospital care, particularly increased capital investments required to purchase the expensive equipment and the augmented staffing patterns required to carry out the complex procedures. The noted increases in the per diem reimbursement for short-stay hospital services reflect, therefore, changes in the units of services rendered and the technical complexity of the services as well as the pervasive effects of price inflation.

A Congressional Budget Office (CBO) study (Expenditures for Health Care: Federal Programs and Their Effects, 1977) examined the relative contributions of inflation and the quantity/quality of services used as related to the increase in the cost of a day of care in a short-stay hospital. Data from this study are presented in Table 10. Although the figures apply to the total hospital population, they are indicative of the relative contribution of each of these factors to the increase in Medicare per diem costs.

TABLE 10
Sources of Increase of Hospital Cost Per Patient Day, Fiscal Years 1960-1976

Item	Average Annual Percent Increase						
	1960-65[1]	1965-67	1967-71	1971-73	1974	1975	1976
Total increase	6.7	10.4	14.0	10.5	9.8	15.8	14.7
Increase in wages and prices	3.4	3.9	7.8	5.2	6.8	10.7	8.3
Wages	4.7	4.8	9.9	6.3	5.2	9.8	9.0
Prices	1.3	2.6	4.8	3.8	9.0	11.0	7.1
Increase in services	3.3	6.5	6.2	5.3	3.0	5.1	6.4
Labor	1.7	3.9	2.9	2.3	0.7	2.7	2.2
Nonlabor X-rays, lab tests, etc.	5.9	10.5	11.0	9.3	6.0	7.5	10.6
Percent total increase owing to:							
Wages and prices	50.7	37.5	55.7	49.5	69.4	67.7	56.3
Services	49.3	62.5	44.3	50.5	30.6	32.3	43.7

[1]Figures calculated per patient day; for all other periods figures for per patient day are adjusted to include an approximation of equivalent services to outpatients.

Source: Congressional Budget Office. Expenditures for Health Care: Federal Programs and Their Effects (Washington, D.C., 1977), p. 29.

The CBO study estimated that for the period 1965-1967, about 62.5 percent of the increase in the daily hospital cost per patient was attributable to increased numbers and quality of services performed. Higher wages and prices (that is, inflation) accounted for only 37.5 percent of the increase in daily hospital cost per patient. On the other hand, inflation seems to have played a greater role in the escalation of hospital costs following the expiration of the Economic Stabilization Program. The CBO study estimates that in 1975 approximately two-thirds of the increase in the hospital cost per patient day was due to higher wages and prices.

The preceding discussion makes it clear that the use of Medicare reimbursement per inpatient day has its limitations for explaining the rapid increase in program expenditures for short-stay hospital services between 1967 and 1976. While price inflation was an increasingly significant factor in the rise of the HI hospital expeditures during the ten-year period, analysis of the changes in the content of an "average" inpatient day for the aged Medicare beneficiaries and their contributions to rising HI expenditures is beyond the scope of the available data.

VII. Utilization of Short-Stay Hospitals by Characteristics of Patients, Hospitals, and Geographic Location

The use of short-stay hospitals by aged Medicare beneficiaries during the period 1967-1976 varied considerably by patient and hospital characteristics. Of the factors included in this study, variations in use by the age and residence of the beneficiary and the bed size of the hospital were most marked.

Table 11 shows the TDOC rate for 1967, 1972, and 1976 for HI beneficiaries by sex, age, and race. One must be cautious in interpreting these data and other similar tables that follow in this report. The main problem is the possibility of interaction among the variables. For example, from 1967 to 1976, utilization by women has fallen relative to men. However, it is also observed that the annual increase in use in the older age groups has fallen relative to the younger age groups. Since women make up an increasing proportion of the older age group, the widening differences in use between men and women may be influenced by the difference in the age distribution of men and women. In the discussions that follow one must bear in mind the possible problems of interpretation caused by the presence of interacting variables.

A. Use by Sex

There were substantial differences between men and women in the use of HI short-stay hospital services. During the period 1967-1976, men comprised on the average, about 41 percent of the total aged HI enrollment population and accounted for about 45 percent of all aged discharges from short-stay hospitals. Men, therefore, used relatively more hospital services than women.

As shown in Table 11 for the years 1967, 1972, and 1976, the TDOC rate per 1,000 beneficiaries was consistently higher for men then women. In 1976, the TDOC rate for men was 3,897 and for women it was 3,538, a difference of 10 percent. The above pattern resulted because men had a substantially higher discharge rate throughout the period. In 1976, the discharge rate per 1,000 beneficiaries was 363 for men and 311 for women, a difference of close to 17 percent. The smaller difference in the TDOC rates between men and women was due to women staying in the hospital about 0.7 days longer than men.

B. Use by Age

For each of the years (1967, 1972, and 1976) shown in Table 11, the TDOC rate per 1,000 beneficiaries was greater for older age groups. In 1967, the TDOC rate for persons aged 65 to 66[8] was 2,574 compared to 6,097 for persons aged 85 and over—a difference of 137 percent. By 1976, the disparity between the youngest and oldest age groups was reduced somewhat; the TDOC rate for HI beneficiaries aged 65 to 66 was 2,672 and for persons aged 85 and over it was 5,484, a difference of 105 percent. This narrowing of the differential resulted from the fact that the rate of increase in the discharge rate was higher for the younger age groups while the decline in the ALOS was greater for the older age groups.

Between 1967 and 1976, the hospital discharge rate per 1,000 beneficiaries was greater for each successive age group. In 1967, the discharge rate ranged from 207 for those persons aged 65 to 66 to 382 for persons 85 and over, a difference of 85 percent. By 1976, the difference between the two age groups was 71 percent; the discharge rate per 1,000 beneficiaries was 263 for persons aged 65 to 66 and 449 for persons aged 85 and over. Similarly, the ALOS per discharge was positively correlated with the age of the beneficiary over the years 1967 to 1976. In 1967, the ALOS ranged from 12.5 days for the youngest age group to 15.9 days for the oldest age group, a difference of 3.4 days. By 1976, the difference in the ALOS was 2.1 days.

C. Use by Race

Throughout the period 1967 to 1976, the TDOC rate was higher for white persons than persons of other races, although the disparity has declined over the years (Table 11). The TDOC rate for whites was about 28 percent higher in 1967 than for persons of other races. However, by 1976, the difference in the hospital utilization rate between the two racial groups was reduced to about 9 percent (3,717 for whites and 3,398 for non-whites).

The difference by race groups in hospital use was caused primarily by higher discharge rates of whites. In 1967, the difference in the discharge rate was over 40 percent; by 1976, the difference was still 23 percent (338 for whites and 274 for other races). On the other hand, the ALOS was consistently about 1.3 days longer for persons of non-white races than for white persons. For example, in 1976, the ALOS for other races was 12.4 days while the ALOS for whites was 11.0 days. The difference in ALOS between the two race groups may be attributable to differences in the severity of the conditions upon admission to the hospital (Differences in Health Characteristics, U.S., 1965-67).

[8]The utilization rates for the age group 65-66 may be somewhat misleading in that HI beneficiaries attaining age 65 during the reporting period may not have been "at risk" for the entire year.

TABLE 11

Days of Care Rate and Discharge Rate Per 1,000 Hospital Insurance (HI) Beneficiaries, and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Demographic Characteristics, 1967, 1972 and 1976

Demographic Characteristics	Days of Care Rate Per 1,000 Beneficiaries				Discharge Rate Per 1,000 Beneficiaries				Average Length of Stay			
	1967	1972	1976	Percent Change 1967-1976	1967	1972	1976	Percent Change 1967-1976	1967	1972	1976	Percent Change 1967-1976
Total	3,701	3,656	3,684	-0.5	268	302	332	23.9	13.8	12.1	11.1	-19.6
Sex												
Men	3,844	3,860	3,897	1.4	290	330	363	25.2	13.3	11.7	10.7	-19.5
Women	3,596	3,512	3,538	-1.6	252	283	311	23.4	14.2	12.4	11.4	-19.7
Age												
65-66	2,574	2,653	2,672	3.8	207	242	263	27.1	12.5	10.9	10.1	-19.2
67-68	2,751	2,772	2,736	-0.5	220	247	266	20.9	12.5	11.2	10.2	-18.4
69-70	2,965	3,018	3,017	1.8	230	263	287	24.8	12.9	11.4	10.5	-18.6
71-72	3,243	3,325	3,297	1.7	245	282	307	25.3	13.2	11.8	10.7	-18.9
73-74	3,592	3,633	3,591	[2]	265	303	328	23.8	13.6	12.0	10.9	-19.9
75-79	4,264	4,124	4,165	-2.3	301	331	367	21.9	14.2	12.4	11.3	-20.4
80-84	5,240	4,865	4,891	-6.7	348	376	413	18.7	15.0	12.9	11.8	-21.3
85 and over	6,097	5,339	5,484	-10.1	382	403	449	17.5	15.9	13.2	12.2	-23.3
Race[1]												
White	3,750	3,695	3,717	-0.6	275	308	338	22.9	13.6	12.0	11.0	-19.1
All other	2,927	3,228	3,398	16.1	196	242	274	39.8	14.9	13.3	12.4	-16.8

[1]Excludes unknown race.
[2]Less than 0.05 percent.

Source: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-stay Hospital Utilization, 1967," and annual unpublished updates for 1968-1976.

D. Use by Geographic Region

Data on the regional variations in short-stay hospital use are given in Table 12. Regional variations in the TDOC rate, the discharge rate, and the ALOS were remarkably consistent between 1967 and 1976 (Gornick, 1975). This is clearly demonstrated in the graphs of Figures 4, 5, and 6. Regional differences in hospital use reflect the complex and simultaneous interaction of differences in the availability and accessibility to medical care resources, socioeconomic characteristics of the population, differences in the structure of the local health care delivery system, regional differences in medical care practices, and differences in the incidence of disease or illness. While these factors underlie the geographical differences in use of short-stay hospitals, analysis of the relationships of these variables is beyond the scope of this paper.

The TDOC rate was consistently highest in the North Central region during the 1967 to 1976 period. This resulted from the combined effect of a relatively high discharge rate and an ALOS above the national average. Conversely, the Western region consistently registered the lowest TDOC rate, reflecting its low discharge rate and the lowest ALOS of the four regions. Compared with the West, the TDOC rate in the North Central region was 28 percent greater in 1967; by 1976, the difference had grown to 43 percent primarily due to the reduction of the TDOC rate in the West by 14 percent. During the 1967 to 1976 period, the largest growth in the TDOC rate occurred in the Northeast region (11 percent). By 1976, the TDOC rate in the Northeast had climbed to about the level of the North Central region.

As illustrated in Figure 2, discharge rates varied widely across the nation with the South consistently having the highest rate and the Northeast the lowest; the North Central and the Western regions ranked second and third, respectively. From 1967 to 1976 the ranking of each region in terms of the discharge rate remained the same. The regional ranking in the ALOS is different from the discharge rate. During the 1967 to 1976 period, the Northeast consistently ranked highest in the ALOS followed by the North Central, the South, and the Western regions. In 1976, the ALOS in the Northeast was 13.5 days, 4.6 days longer than in the Western region.

TABLE 12

Days of Care Rate and Discharge Rate Per 1,000 Hospital Insurance (HI) Beneficiaries, and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Region, 1967-1976

Utilization Measures and Region	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Percent change 1967-1976
Days of care per 1,000 Beneficiaries											
All areas[1]	3,701	3,938	3,947	3,800	3,670	3,656	3,662	3,677	3,631	3,684	– 0.5
Northeast	3,621	3,932	4,006	3,844	3,819	3,825	3,881	3,838	3,941	4,014	10.9
North Central	4,177	4,356	4,376	4,239	4,028	4,057	4,031	4,006	4,031	4,027	– 3.6
South	3,599	3,922	3,935	3,831	3,684	3,630	3,666	3,752	3,599	3,692	2.6
West	3,271	3,324	3,318	3,092	2,941	2,917	2,950	2,961	2,812	2,808	– 14.2
Number of discharges per 1,000 beneficiaries											
All areas[1]	268	285	292	292	294	302	313	320	324	332	23.9
Northeast	225	243	249	246	253	262	273	274	290	297	32.0
North Central	286	298	306	309	310	322	333	335	348	353	23.4
South	293	316	323	325	323	330	339	354	349	362	23.6
West	277	292	302	294	294	301	314	321	312	315	13.7
Average length of stay											
All areas[1]	13.8	13.8	13.5	13.0	12.5	12.1	11.7	11.5	11.2	11.1	– 19.6
Northeast	16.1	16.2	16.1	15.6	15.1	14.6	14.2	14.0	13.6	13.5	– 16.2
North Central	14.6	14.6	14.3	13.7	13.0	12.6	12.1	12.0	11.6	11.4	– 21.9
South	12.3	12.4	12.2	11.8	11.4	11.0	10.8	10.6	10.3	10.2	– 17.1
West	11.8	11.4	11.0	10.5	10.0	9.7	9.4	9.2	9.0	8.9	– 24.6

[1]Includes Puerto Rico, Virgin Islands and other areas outside the 50 States and the District Columbia.

Source: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-stay Hospital Utilization, 1967," and annual unpublished updates 1968-1976.

In a recent HCFA study (Deacon, Lubitz, Gornick, and Newton, 1979) analysis of Medicare data demonstrated that the regional variations in the hospital discharge rate and ALOS are significantly related to certain characteristics describing the supply of health care services to an area. For example, discharge rates were found to be lower in areas with a relatively large supply of physicians (per Medicare beneficiary) and in areas with high hospital occupancy rates. In another (unpublished) HCFA study, the relationships between the variations in ALOS among regions and patient characteristics such as age and sex were explored taking into account adjustments for primary diagnosis and surgical procedures performed. The results of this study showed that geographical differences in ALOS are not explained by patient characteristics, diagnostic conditions, or surgical procedures. Clearly, more research is needed before there is complete understanding of the geographic differences in hospital use described above.

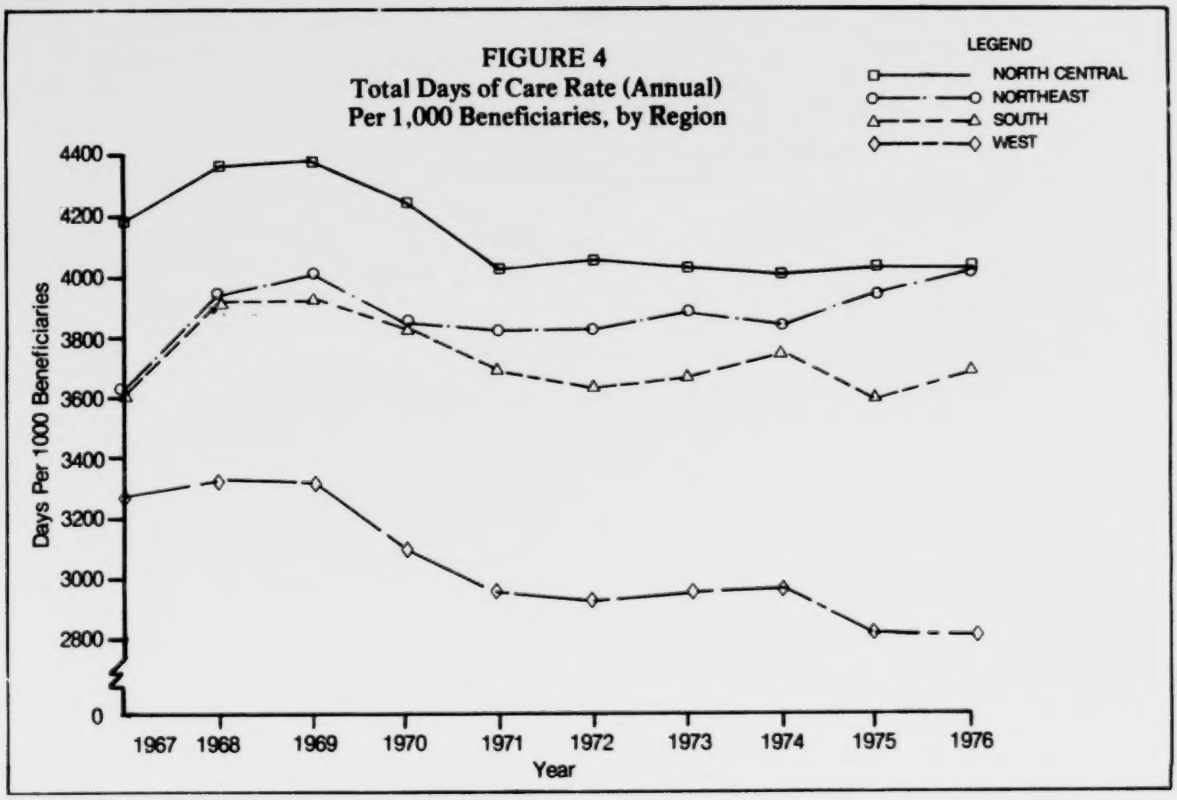


FIGURE 4
Total Days of Care Rate (Annual)
Per 1,000 Beneficiaries, by Region
LEGEND
NORTH CENTRAL
NORTHEAST
SOUTH
WEST
Days Per 1000 Beneficiaries
4400
4200
4000
3800
3600
3400
3200
3000
2800
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
Year

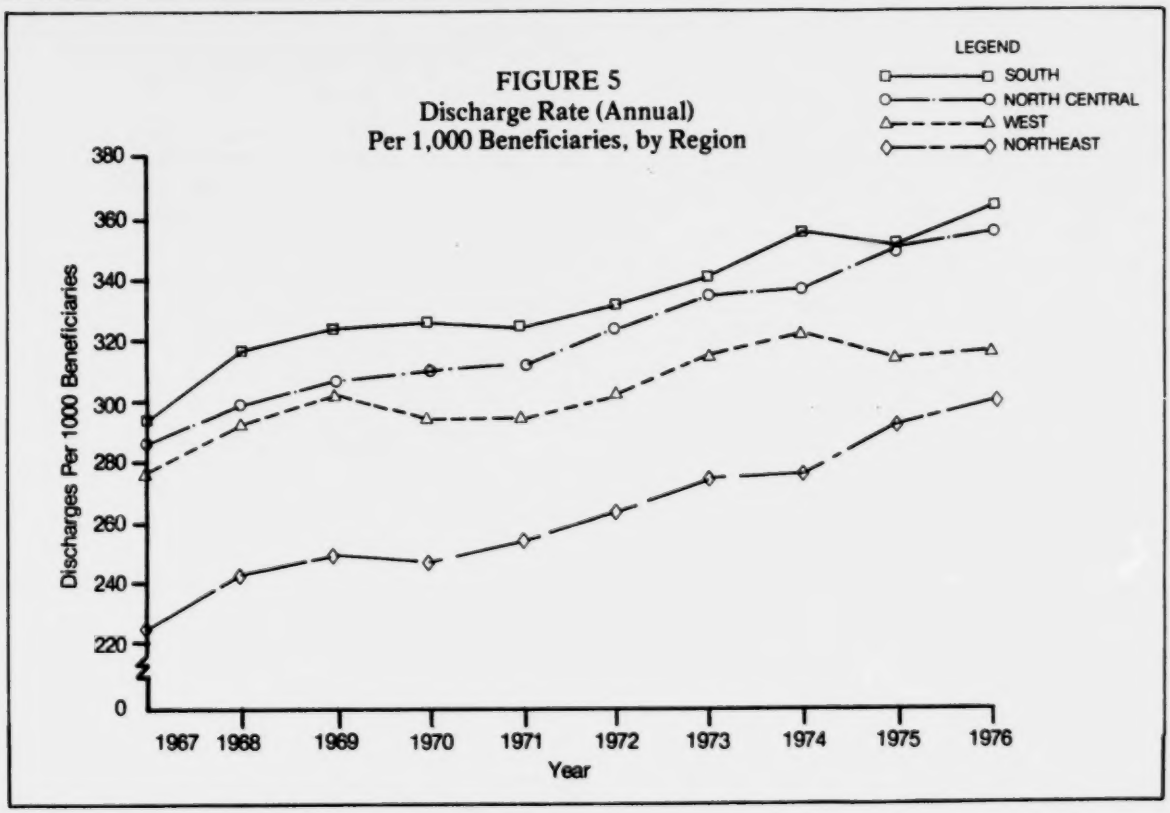
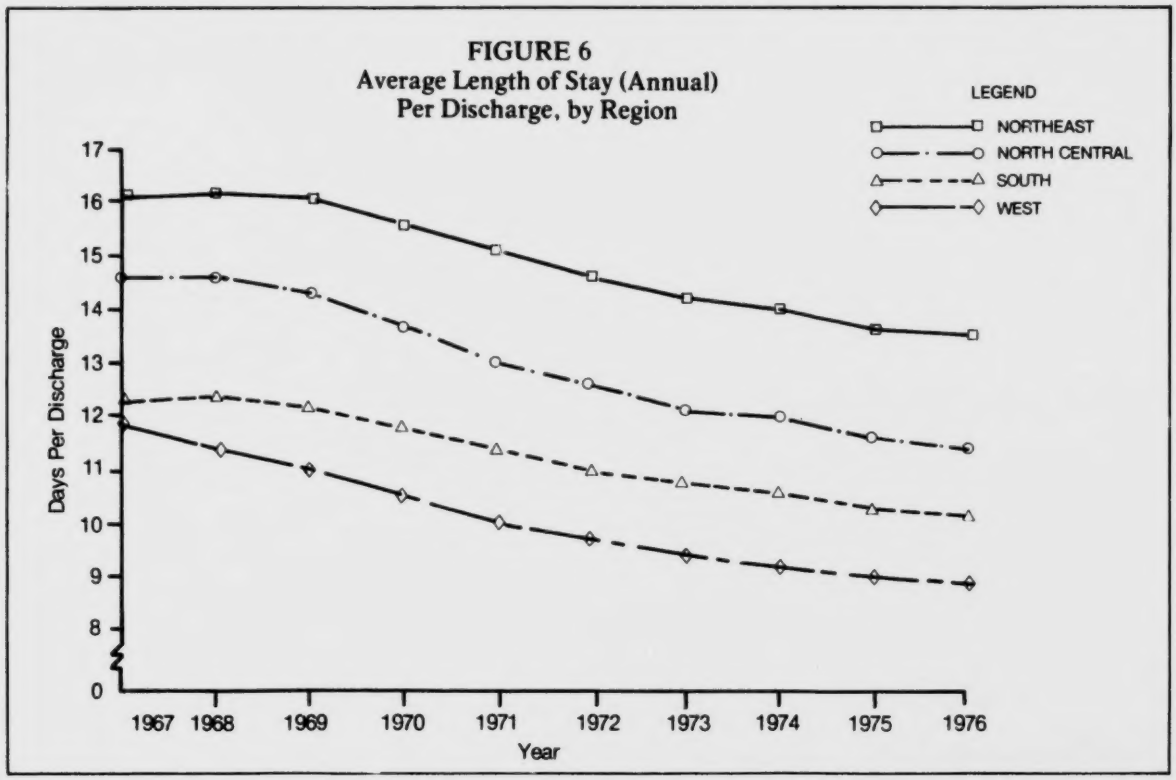


FIGURE 5
Discharge Rate (Annual)
Per 1,000 Beneficiaries, by Region
LEGEND
SOUTH
NORTH CENTRAL
WEST
NORTHEAST
Discharges Per 1000 Beneficiaries
380
360
340
320
300
280
260
240
220
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
Year



E. Use by Hospital Characteristics

As shown in Table 13, about 70 percent (5.3 million) of all aged discharges from short-stay hospitals in 1976 were from voluntary, nonprofit hospitals operated by churches and other nonprofit groups. Hospitals operated by State and local governments accounted for 21 percent of the discharges (1.6 million), and proprietary hospitals accounted for nine percent of the discharges (0.7 million). The number of discharges by type of hospital was distributed in about the same proportion for each of the years 1967, 1970, 1974, and 1976. Discharges of aged Medicare inpatients were roughly proportionate to the distribution of beds by type of hospital. Voluntary hospitals accounted for a slightly higher proportion of discharges than of beds, while on the other hand, government hospitals accounted for a slightly higher proportion of beds than discharges. Proprietary hospitals accounted for roughly the same proportion of discharges and beds.

ALOS was consistently longest in voluntary hospitals followed by government and proprietary hospitals during the years 1967 to 1976. In 1976, ALOS in voluntary hospitals was 11.5 days, about a day and a half longer than in government and proprietary hospitals. Over the 10-year period, hospitals operated by the government showed the largest decline in ALOS—about 26 percent.

Trends in the distribution of days of care, discharges, and ALOS for aged HI beneficiaries in short-stay hospitals are shown by bed size of the hospital in Table 14. In 1967, on the average, for every 100 discharges of aged Medicare patients from short-stay hospitals, 29 were from hospitals with fewer than 100 beds, 33 were from hospitals with 100-249 beds, 27 were from hospitals with 250-499 beds, and 10 were from hospitals with 500 or more beds. During the years 1967 to 1976, however, there was a trend towards greater use of larger hospitals by aged Medicare beneficiaries. In 1976, for every 100 discharges of aged beneficiaries from short-stay hospitals an estimated 20 were from hospitals with fewer than 100 beds, 30 were from hospitals with 100-249 beds, 33 were from hospitals with 250-499 beds, and 17 were from hospitals with 500 or more beds (Table 14). The percent distribution of days of care by bed size of hospital is similar to that for discharges. As in the case with discharges, from 1967 to 1976, the proportion of days of care dropped in the smaller hospitals and increased in the larger hospitals.

There is a direct relationship between ALOS and bed size. That is, the ALOS increased with hospital size. In 1967, it ranged from 12.4 days per discharge in hospitals with fewer than 100 beds to 16.2 days per discharge in hospitals with 500 beds, a difference of 3.8 days. In 1976, the ALOS ranged from 9.1 days in the smaller hospitals to 12.8 days in the larger hospitals, a difference of 3.7 days. This trend is generally attributed to the fact that larger hospitals offer more specialized services and equipment. As a result, the patient case mix probably includes more severe cases and more surgical patients which result in longer hospital stays.

TABLE 13

Percentage Distribution of Discharges, Average Length of Stay, and Percentage Distribution of Beds for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Type of Control, Selected Years 1967-1976

Utilization Measures and Type of Control	1967	1970	1974	1976	Percent Change 1967-1976
Percentage distribution of discharges					
All hospitals	100.0	100.0	100.0	100.0	—
Voluntary	70.8	71.1	70.4	70.1	– 1.0
Government	21.2	20.8	20.7	21.0	– 0.9
Proprietary	8.0	8.1	8.9	9.0	12.5
Average length of stay					
All hospitals	13.8	13.0	11.5	11.1	– 19.6
Voluntary	14.0	13.3	11.8	11.5	– 17.9
Government	13.7	12.5	10.9	10.1	– 26.3
Proprietary	12.0	11.6	10.4	10.1	– 15.8
Percentage distribution of beds					
All hospitals	100.0	100.0	100.0	100.0	—
Voluntary	67.8	68.3	68.0	68.2	0.6
Government	25.3	24.8	22.9	22.7	– 10.3
Proprietary	6.9	7.0	9.1	9.2	33.3

SOURCE: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1970, 1974, and 1976.

TABLE 14

Percentage Distribution of Days of Care and Discharges, and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Bed Size, 1967-1976

	Percentage Distribution of Days of Care					Percentage Distribution of Discharges					Average Length of Stay				
		Bed Size					Bed Size					Bed Size			
Year	All Hospitals	Less than 100	100-249	250-499	500 and Over	All Hospitals	Less than 100	100-249	250-499	500 and Over	All Hospitals	Less than 100	100-249	250-499	500 and Over
1967	100.0	26.0	32.9	28.8	12.3	100.0	29.0	33.3	27.3	10.4	13.8	12.4	13.6	14.5	16.2
1968	100.0	26.4	33.2	28.5	12.0	100.0	29.4	33.5	27.1	10.1	13.8	12.3	13.6	14.5	16.3
1969	100.0	24.3	32.8	29.8	13.4	100.0	27.2	33.3	28.1	11.3	13.5	12.0	13.3	14.2	15.9
1970	100.0	23.1	32.1	30.0	14.7	100.0	26.3	32.8	28.3	12.6	13.0	11.4	12.7	13.8	15.2
1971	100.0	21.9	32.2	31.1	14.8	100.0	25.3	32.7	29.2	12.7	12.5	10.9	12.2	13.3	14.5
1972	100.0	20.9	32.1	31.8	15.1	100.0	24.2	32.9	30.0	13.0	12.1	10.4	11.8	12.8	14.1
1973	100.0	20.1	31.3	32.9	15.7	100.0	23.4	32.1	31.0	13.4	11.7	10.0	11.4	12.5	13.6
1974	100.0	19.8	30.8	32.5	16.8	100.0	23.1	31.9	30.5	14.6	11.5	9.9	11.1	12.3	13.4
1975	100.0	16.9	28.3	33.8	21.1	100.0	20.3	29.3	31.9	18.6	11.2	9.3	10.8	11.9	12.7
1976	100.0	16.8	29.3	34.6	19.2	100.0	20.4	30.4	32.5	16.6	11.1	9.1	10.7	11.8	12.8

SOURCE: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1968-1976.

VIII. Short-Stay Hospital Charges, 1967-1976

A. Trends, 1967-1976

Table 15 shows that total charges for aged HI beneficiaries discharged from short-stay hospitals have quadrupled during the first 10 years of Medicare, going from $3.5 billion in 1967 to $14.3 billion in 1976. The average charge per discharge rose from $675 in 1967 to $1,375 in 1976, or by 2.8 times. The average charge per day increased from $49 to $169, or by 3.4 times.

Mean charges per day escalated at a faster rate than mean charges per discharge due principally to the decline (2.7 days) in ALOS and the increase in the proportion of ancillary charges (such as laboratory and radiology tests) to total charges during the 10-year period. Based on internal HCFA tabulations, the ratio of ancillary to total charges increased from about 40 percent in 1971 to approximately 50 percent in 1976. Since the bulk of the ancillary charges are usually incurred during the early part of the hospital stay, the general decline in the number of days of hospital care resulted in a rise in the average charge per day.

B. Composition of Short-Stay Hospital Charges

As shown in Table 15, in any given year, total hospital charges for services provided to HI beneficiaries consist of four primary components; HI interim reimbursements, HI retroactive reimbursements, patient liability, and non-recoverable charges. These components are discussed, below, in relation to hospital charges during 1976 and overall trends during the first 10 years of the Medicare program.

Total charges for aged Medicare beneficiaries discharged from short-stay hospitals during 1976 were $14.3 billion. Of this total, Medicare patients were responsible for nearly $1.0 billion in non-reimbursable charges or 6.6 percent of total hospital charges. Non-reimbursable charges include the following: inpatient deductible amounts; coinsurance amounts; blood deductible amounts; and charges for non-covered services which include days of care after benefits are exhausted, television and telephone rentals, and private duty nurses, etc. In 1976, charges for non-covered services amounted to about 1.7 percent of total charges.

After non-reimbursable charges were excluded, $10.6 billion or 74.2 percent of total hospital charges were reimbursed by the HI program in 1976. These payments reflect reimbursements based on interim rates, usually established as a per diem amount or as a percentage of total charges. The final amount due each hospital is determined after the end of the fiscal year on the basis of the hospitals' audited reasonable costs of operation. In 1976, retroactive payments based on audited cost reports amounted to an estimated $0.4 billion, or 2.7 percent of total hospital charges.

TABLE 15

Total Hospital Charges, Amount Reimbursed, Additional Reimbursements, Patient Liability, and Nonrecoverable Charges for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, 1967-1976

Year	Total Hospital Charges[1]	Amount Reimbursed[2]	Additional Reimbursements (audit)[3]	Patient Liability[4]					Non-recoverable Charges[5]
				Total	Deductible	Coinsurance	Blood Deductible	Non-covered Charges	
				Amounts (in millions)					
1967	$ 3,529	$ 2,760	$113	$342	$169	$21	$11	$141	$ 314
1968	4,406	3,509	182	365	181	48	13	123	350
1969	5,220	4,085	229	413	204	52	16	141	493
1970	5,886	4,481	224	465	247	47	12	159	716
1971	6,638	5,036	287	490	292	46	13	139	825
1972	7,401	5,576	301	555	340	52	15	148	969
1973	8,277	6,245	493	605	381	50	17	157	934
1974	9,614	7,209	548	720	461	67	19	173	1,137
1975	11,853	8,859	470	824	515	76	18	215	1,700
1976	14,263	10,589	392	944	602	89	17	236	2,341
				Percentage Distribution					
1967	100.0	78.2	3.2	9.7	4.8	.6	.3	4.0	8.9
1968	100.0	79.6	4.1	8.3	4.1	1.1	.3	2.8	7.9
1969	100.0	78.3	4.4	7.9	3.9	1.0	.3	2.7	9.4
1970	100.0	76.1	3.8	7.9	4.2	.8	.2	2.7	12.2
1971	100.0	75.9	4.3	7.4	4.4	.7	.2	2.1	12.4
1972	100.0	75.3	4.1	7.5	4.6	.7	.2	2.0	13.1
1973	100.0	75.4	6.0	7.3	4.6	.6	.2	1.9	11.3
1974	100.0	75.0	5.7	7.5	4.8	.7	.2	1.8	11.8
1975	100.0	74.7	4.0	7.0	4.3	.6	.2	1.8	14.3
1976	100.0	74.2	2.7	6.6	4.2	.6	.1	1.7	16.4

[1]Represents hospital charges for services rendered to Medicare patients as reported on the billing form (SSA-1453).

[2]Represents amounts reimbursed on an interim basis by Hospital Insurance (HI) program.

[3]Represents retroactive payments to hospitals based on their audited reasonable costs of operation. Estimates were prepared in OFAA within HCFA.

[4]Represents non-reimbursable charges for which Medicare patients were responsible.

[5]Represents primarily the difference between hospital charges and their reasonable costs of operation.

SOURCE: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," annual unpublished updates for 1968-1976.

The remainder of the total charges is composed of non-recoverable charges which represent, primarily, the difference between hospital charges and hospital costs. These charges are "non-recoverable" in the sense that neither the Medicare program nor the patient is liable. In 1976, these charges amounted to an estimated $2.3 billion, or 16.4 percent of the total hospital charges.[9]

Over the first 10 years of the Medicare program, the proportion of hospital charges reimbursed (on an interim basis) by HI declined steadily, going from a high of 79.6 percent in 1968 to a low of 74.2 percent in 1976. In addition, since 1973, retroactive reimbursements paid out by HI have also declined as a proportion of charges. In 1976, retroactive adjustment was only 2.7 percent of charges.[10] This represents improved estimating and adjustments of interim payments to actual reimbursable costs. Overall, the proportion of total hospital charges reimbursed (interim and retroactive payments) by HI ranged from a high of 83.7 percent in 1968 to a low of 76.9 percent in 1976.

Total patient liability (or cost-sharing under HI) dropped steadily from 9.7 percent of total hospital charges in 1967 to 6.6 percent in 1976. The decline in total patient liability resulted primarily from the decrease in the proportion of non-covered charges, from 4.0 percent in 1967 to 1.7 percent in 1976. The inpatient deductible accounted for one-half to two-thirds (4 to 5 percent) of the charges for which aged Medicare patients were liable (these payments reflect the fact that HI beneficiaries are liable for paying the deductible amount once in a benefit period). Coinsurance payments consistently accounted for only about 1 percent of the total hospital charges. HCFA short-stay hospital tabulations for 1976 show that only an estimated 2.5 percent of the 5.2 million aged persons with hospital stays in 1976 used one or more coinsurance days for the 61st through the 90th day in a benefit period, and only an estimated 0.7 percent used one or more lifetime reserve days. Total charges for which neither the Medicare program nor the patient were liable increased from a low of 7.9 percent in 1968 to a high of 16.4 percent in 1976.

C. Patient Characteristics and Hosptial Charges

As shown in Table 16, and for each of the years tabulated, the mean hospital charge per discharge displayed only small variation by age. The charge per discharge was, however, higher for men than women, and for persons of races other than white persons. The difference in the mean charge by sex and by race was only about one percent during the first full year of the program; however, by 1976, the disparity had increased to about six percent between men and women, and close to 14 percent between race groups. In 1976, the mean charge per discharge for men and women was $1,939 and $1,824, respectively; for persons of other races and white persons, it was $2,117 and $1,856, respectively.

For the years 1967, 1972 and 1976 the average charge per day was lower for successively older age groups—on the average, about 17 percent. In 1967, the mean charge ranged from $52 for those persons aged 65 to 66 years to $43 for persons 85 years and over. In 1976, the mean charge per day ranged from $182 for the youngest age group to $152 for the oldest age group. This lower mean charge is due in part to the fact that older patients have longer stays which result in a lower mean charge per day because the costs of ancillary services, which are usually concentrated in the early part of a patient's hospitalization, are spread over more hospital days.

D. Hospital Size and Hospital Charges

Hospital charges varied considerably by the bed size of the hospital (Table 16). Mean charges per discharge and per day increased with hospital size. In 1976, the mean charge per discharge increased from $1,135 in hospitals with less than 100 beds to $2,565 in hospitals with 500 or more beds, or by 126 percent. The mean charge per day ranged from $124 per day in hospitals with less than 100 beds to $200 per day in hospitals with 500 or more beds, a difference of 61 percent. This pattern, as shown in Table 16, was consistent throughout the 10-year period and reflects the fact that more complex cases are treated in larger hospitals and require longer lengths of stay.

E. Geographic Variations in Hospital Charges

Hospital charges per discharge differed among the four United States census regions. These are shown in Table 16 and Figures 7 and 8. Mean charges per discharge were consistently highest in the Northeast, followed by the West, the North Central, and the South. For example, in 1976, mean charges per discharge in the Northeast ($2,507) were about 65 percent higher than in the South ($1,520). These figures reflect a combination of the Northeast having the longest ALOS (13.5 days) and the second highest mean charge per day ($186), while the South had a relatively low ALOS (10.2 days) and the lowest mean charge per day ($149).

There were large regional variations in hospital charges per day. In 1967, 1972, and 1976, mean charges per day were highest in the West, followed by the Northeast, the North Central, and the South. In 1976, the disparity between the mean charge per day in the West ($218) and the South ($149) was 46 percent; the difference was 40 percent in 1967.

Wide geographical variations in the cost of hospital care are related to a variety of factors, including the personal income level in the area and such hospital characteristics as bed size and occupancy rate. The size of the hospital, as discussed above, tends to raise the cost of hospital care and most of the larger hospitals participating in the Medicare program are located in the Northeast. Furthermore, it has been suggested that unused beds might, overall, tend to raise the unit costs of hospital services. In this respect, the occupancy rate has been consistently lowest in the West.

[9]During the period covered by this study, Medicare has continued to reimburse on the basis of reasonable costs of services furnished to program beneficiaries. However, since the costs of hospital revenue centers furnishing ancillary services are apportioned by the ratio of charges for services to Medicare beneficiaries to the total charges for all services furnished by the center hospitals have tended to arrange their charging practices to maximize third-party reimbursement. The linkage between the costs of hospital services and charges have attenuated over the ten-year period.

[10]Estimates for annual hospital retroactive HI reimbursements were provided by OFAA.

TABLE 16

Average Charge Per Discharge and Per Day, and Percent of Charges Reimbursed for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Demographic Characteristics, Region, and Bed Size, 1967, 1972, and 1976

Demographic Characteristics, Region, and Bed Size	Average Charge Per Discharge				Average Charge Per Day				Percent of Total Charges Reimbursed in 1976
	1967	1972	1976	Percent Change 1967-1976	1967	1972	1976	Percent Change 1967-1976	
Total	$675	$1,160	$1,875	177.8	$49	$ 96	$169	244.9	74.2
Sex									
Men	680	1,190	1,939	185.1	51	102	180	252.9	71.9
Women	671	1,136	1,824	171.8	47	92	161	242.6	76.1
Age									
65-66	651	1,130	1,848	183.9	52	103	182	250.0	71.8
67-68	655	1,145	1,862	184.3	52	102	181	248.1	72.1
69-70	666	1,151	1,872	181.1	52	101	178	242.3	72.9
71-72	675	1,166	1,878	178.2	51	99	175	243.1	73.4
73-74	681	1,168	1,887	177.1	50	98	172	244.0	73.8
75-79	686	1,187	1,894	176.1	48	95	167	247.9	74.8
80-84	686	1,170	1,885	174.8	46	91	159	245.7	76.1
85 and over	684	1,133	1,855	171.2	43	86	152	253.5	77.5
Race[1]									
White	672	1,151	1,856	176.2	49	96	169	244.9	74.2
All other	678	1,265	2,117	212.2	45	95	170	277.8	75.1
Region[2]									
Northeast	884	1,615	2,507	183.6	55	111	186	238.2	71.0
North Central	662	1,117	1,787	169.9	45	89	156	246.7	76.7
South	531	913	1,520	186.3	43	83	149	246.5	72.9
West	706	1,146	1,956	177.1	60	118	218	263.3	70.7
Bed Size									
Less than 100	474	727	1,135	139.5	41	72	124	202.4	75.8
100-249	660	1,098	1,727	161.7	51	95	161	215.7	73.6
250-499	800	1,354	2,125	165.6	58	108	180	210.3	73.7
500 and over	953	1,675	2,565	169.2	62	122	200	222.6	75.2

[1]Excludes unknown race.
[2]Excludes Puerto Rico, Virgin Islands, and other areas outside the 50 States and District of Columbia.

SOURCE: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1972 and 1976.

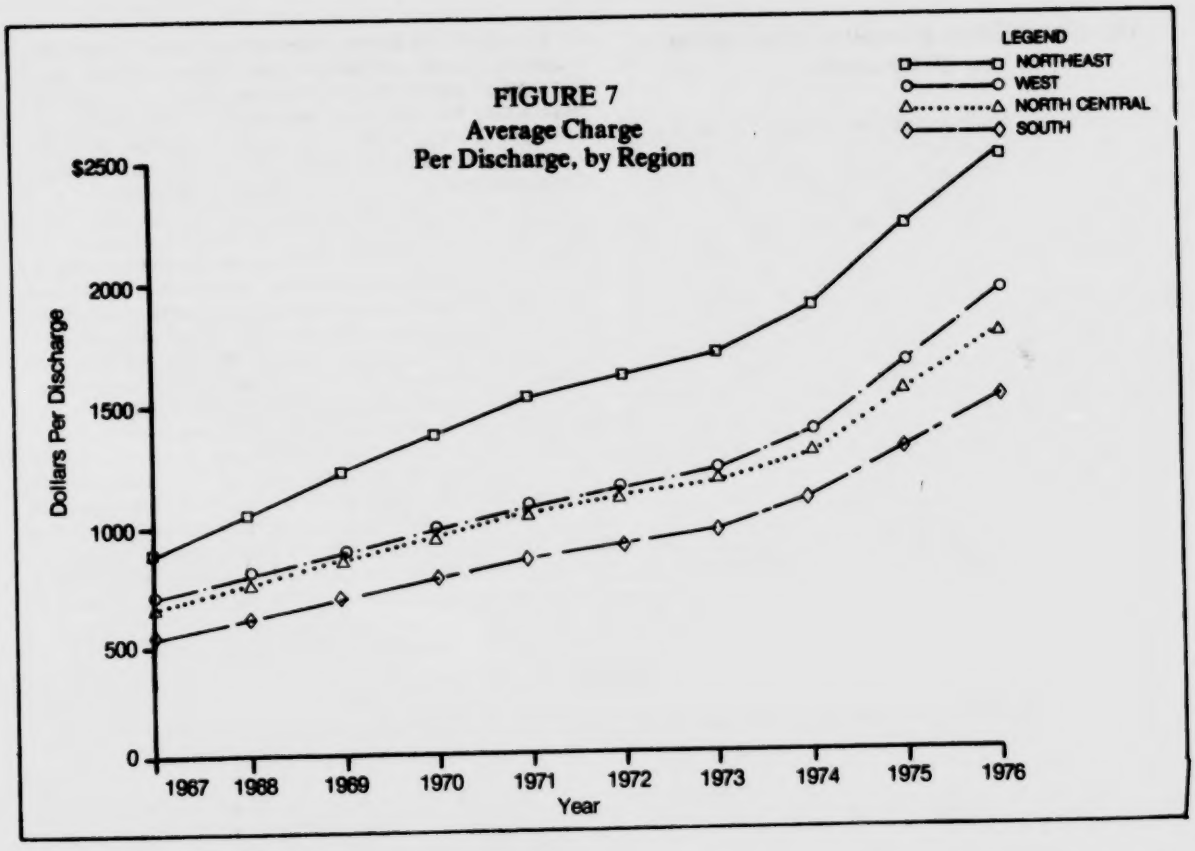


FIGURE 7
Average Charge Per Discharge, by Region

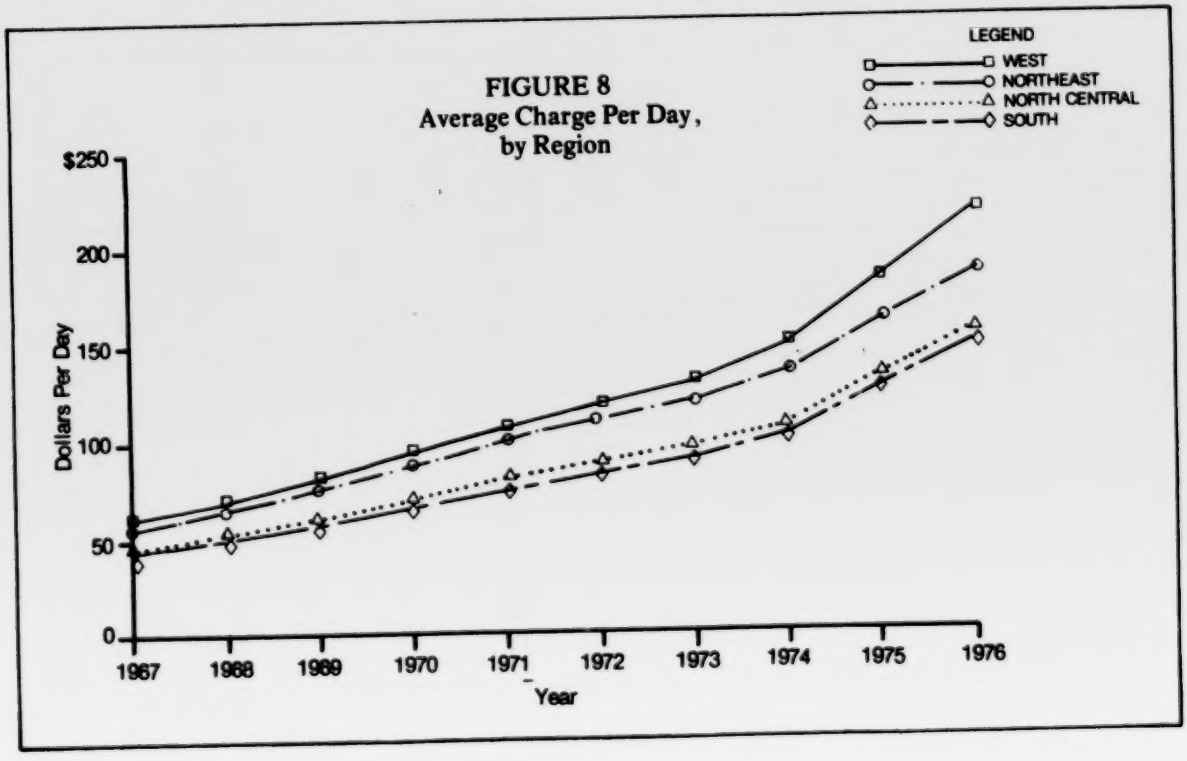


FIGURE 8
Average Charge Per Day, by Region

IX. Short-Stay Hospital Utilization by Diagnosis

Diagnosis is a basic aspect of hospitalization that is frequently used in assessments of utilization trends. In this report, utilization is first discussed in relation to broad classification of diseases and then in terms of the 29 leading primary discharge diagnoses.[11] Hospital use by diagnosis can be clustered by grouping primary discharge diagnoses of aged Medicare inpatients into major ICDA groupings. The data in Table 17 present an overview of hospital use by the major disease classifications. Since each classification subsumes conditions of varying medical requirements for its treatment, the hospital use data shown for each classification should be taken only as general indications of beneficiary experiences. As shown in Table 17, in 1976, diseases of the circulatory system accounted for about 27 percent of all aged Medicare discharges from short-stay hospitals. Other leading broad ICDA classes were diseases of digestive system; neoplasms; diseases of respiratory system; and accidents, poisonings, and violence. These latter four classifications, in 1976, accounted for approximately 36 percent of all aged Medicare discharges from short-stay hospitals.

ALOS varied considerably among the 15 major ICDA classes contained in Table 17. In 1976, the diagnostic classes with the longest ALOS were accidents, poisonings, and violence; neoplasms; mental disorders; and diseases of skin and subcutaneous system. In contrast, diseases of nervous system and sense organs, and symptoms and ill-defined conditions had the shortest stays. The short ALOS for diseases of the nervous system and sense organs (6.4 days) is due, in part, to the influence of cataract surgery. Cataract surgery accounts for two-thirds of all discharges in this group and has an ALOS of 5.0 days. The high ALOS for accidents, poisonings, and violence (13.3 days) is partially due to the discharges following surgery for fracture of the neck of femur which accounts for about one-fourth of all discharges in this group and which had an ALOS of 20.8 days.

[11]Selection of the 29 leading diagnoses was based on frequency of occurrence according to a continuing study of hospital discharges under Medicare.

TABLE 17

Percentage Distribution of Discharges, Average Length of Stay, and Mean Charge Per Discharge and Per Day for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Major Diagnostic Group, 1976

Major Diagnostic Group	ICDA-8 Codes[1]	Percentage Distribution of Discharges	Percent of Discharges with Surgery	Average Length of Stay	Mean Total Charges	
					Per Discharge	Per Day
Total, all groups	—	100.0	31.6	11.1	$1,875	$169
Infective and parasitic diseases	000-136	2.4	15.0	9.7	1,546	159
Neoplasms	140-239	9.9	54.4	12.9	2.319	179
Endocrine, nutritional and metabolic diseases	240-279	3.0	15.9	11.6	1,694	145
Diseases of blood and blood-forming organs	280-289	1.1	13.7	10.3	1,671	162
Mental disorders	290-315	1.8	5.5	13.2	1,681	127
Diseases of nervous system and sense organs	320-389	5.4	75.5	6.4	1,114	174
Diseases of circulatory system	390-458	26.9	12.5	11.6	2,006	173
Diseases of respiratory system	460-519	8.4	9.6	10.3	1,768	172
Diseases of digestive system	520-577	10.9	43.9	10.3	1,808	176
Diseases of genitourinary system	580-629	6.5	66.9	9.5	1,635	172
Diseases of the skin and subcutaneous system	680-709	1.1	35.8	12.4	1,744	140
Diseases of musculoskeletal system and connective tissue	710-738	3.8	33.2	11.9	1,845	155
Congenital anomalies	740-759	0.2	49.3	9.0	1,615	179
Symptoms and ill-defined conditions	780-796	2.1	21.3	8.4	1,472	174
Accidents, poisionings, and violence	800-999	7.2	43.3	13.3	2,094	157
Codes unknown	—	9.3	25.9	11.4	1,963	172

[1]*International Classification of Diseases, Adapted for Indexing Hospital Records by Disease*, 1968, 8th Edition.

SOURCE: National Medicare Statistical System: HCFA unpublished data.

As might be expected, the incidence of surgery for aged Medicare inpatients varied considerably among the major ICDA classes. In 1976, there were two diagnostic classes—mental disorders, and diseases of respiratory system—in which fewer than 10 percent of the discharges were treated by a surgical procedure. In contrast, there were two ICDA classes which displayed very high rates for surgery—diseases of nervous system and sense organs (75 percent), predominantly for cataracts, and diseases of genitourinary system (67 percent) which include infections of the kidney, hyperplasia of prostate, and uterovaginal prolapse.

Among the major ICDA classes, mean charges varied substantially. In 1976, mean charges per discharge ranged from $1,114 for diseases of nervous system and sense organs (which had the lowest ALOS) to $2,319 for neoplasms. Mean charges per day ranged from $127 for mental disorders to $179 for neoplasms. The very high mean charge per day for persons with neoplasms is related to the relatively long hospital stays and costly ancillary services required to treat this condition—such as chemotherapy, cobalt treatments, etc.

Table 18 presents data on the 29 most frequent diagnoses or groups of diagnoses for which aged Medicare beneficiaries were hospitalized in 1976. These 29 classifications accounted for approximately 48 percent of all discharges. The most frequent primary discharge diagnosis was chronic ischemic heart disease. This condition alone accounted for about 8.8 percent of all discharges and 8.6 percent of all days of care. The next three most frequent diagnoses were acute cerebrovascular disease, cataract, and pneumonia. These accounted for 3.3, 3.1, and 2.6 percent, respectively, of all discharges and 4.4, 1.4, and 2.8 percent of all days of care.

Among the 29 leading discharge diagnoses, ALOS ranged from 5.0 days for cataract to 20.8 days for fracture of neck of femur. Mean total charges per discharge ranged from $929 for gastroenteritis and colitis to $3,397 for fracture of neck of femur. The mean charge per day ranged from $130 for gastroenteritis and colitis to $194 for intestinal obstruction without mention of hernia.[12]

[12]Data for the 29 leading diagnoses in this section related to mean total charges per discharge and per day are based on HCFA internal tabulations.

TABLE 18

Percentage Distribution and Average Length of Stay of Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Selected Discharge Diagnosis and Discharge Status, 1976

Primary Discharge Diagnosis	ICDA-8 Codes[1]	Percent of Discharges by Discharge Status			Percent of Discharges by Discharge Diagnosis			Average Length of Stay		
		Total	Alive	Dead	Total	Alive	Dead	Total	Alive	Dead
Total, all discharges	—	100.0	93.1	6.9	100.0	100.0	100.0	11.1	11.0	12.4
Leading diagnoses	—	100.0								
Gastroenteritis and colitis	009.2	100.0	98.6	1.4	1.0	1.0	0.2	7.1	7.1	10.7
Malignant neoplasm of large intestine	153,154	100.0	87.0	13.0	1.3	1.2	2.4	17.6	17.4	18.6
Malignant neoplasm of bronchus and lung	161.2	100.0	77.9	22.1	1.1	0.9	3.5	13.9	13.8	14.2
Malignant neoplasm of breast	174x	100.0	91.6	8.4	0.8	0.8	0.9	12.8	12.4	16.9
Malignant neoplasm of prostate	185x	100.0	91.4	8.6	1.0	0.9	1.2	11.8	11.7	13.3
Diabetes mellitus	250x	100.0	96.1	3.9	2.3	2.4	1.3	11.9	11.9	14.1
Cataract	374x	100.0	99.9	0.1	3.1	3.4	0.1	5.0	4.9	13.4
Essential benign hypertension	401x	100.0	98.7	1.3	0.8	0.8	0.1	8.0	8.0	12.3
Acute myocardial infarction	410x	100.0	73.6	26.4	2.5	2.0	9.6	13.5	16.0	6.5
Chronic ischemic heart disease	412x	100.0	91.7	8.3	8.8	8.7	10.5	10.7	10.7	10.7
Other ischemic heart disease	411,413,414	100.0	97.8	2.2	1.0	1.0	0.3	8.6	8.6	10.3
Congestive heart failure		100.0	86.5	13.5	1.8	1.7	3.5	11.4	11.5	10.7
Acute cerebrovascular disease	433,434,436	100.0	80.2	19.8	3.3	2.8	9.3	14.9	15.7	11.6
Generalized ischemic cerebrovascular disease	437x	100.0	95.5	4.5	1.1	1.1	0.7	10.4	10.3	13.2
Arteriosclerosis	440x	100.0	92.3	7.7	0.6	0.6	0.7	11.6	11.5	12.5
Acute bronchitis, bronchiolitis, and upper respiratory infection	465x,466x	100.0	98.4	1.6	0.8	0.8	0.2	8.6	8.6	10.1
Pneumonia	480x,486x	100.0	85.7	14.3	2.6	2.4	5.4	11.7	11.8	11.0
Bronchitis, emphysema and asthma	490x,493x	100.0	95.6	4.4	1.6	1.7	1.0	9.6	9.5	11.6
Peptic ulcer	531,532,533	100.0	96.9	3.1	1.2	1.2	0.5	11.3	11.2	15.2
Hernia of abdominal cavity without mention of obstruction	550x,551	100.0	99.3	0.7	2.1	2.2	0.2	8.0	8.0	15.5
Intestinal obstruction without mention of hernia	560x	100.0	92.9	7.1	0.8	0.8	0.8	12.2	12.1	13.7
Diverticular of intestine	562x	100.0	98.5	1.5	1.3	1.4	0.3	9.2	9.1	17.0
Cholelithiasis	574x	100.0	98.4	1.6	1.2	1.3	0.3	12.7	12.6	18.3
Cholecystitis and cholangitis without mention of calculus	575x	100.0	97.8	2.2	0.5	0.6	0.2	11.5	11.4	15.4
Infections of kidney	590x	100.0	95.8	4.2	0.3	0.4	0.2	10.4	10.3	12.8
Hyperplasia of prostate	600x	100.0	99.2	0.8	1.9	2.1	0.2	10.7	10.7	16.5
Uterovaginal prolapse	623x	100.0	99.7	0.3	0.4	0.5	0.0	10.1	10.1	9.9
Osteoarthritis	713.0-713.2	100.0	99.5	0.5	1.3	1.4	0.1	12.9	12.9	18.1
Fracture of neck of femur	820x	100.0	94.5	5.5	1.8	1.8	1.4	20.8	21.0	17.5
All other diagnoses	—	100.0	94.0	6.0	51.7	52.2	45.0	10.8	10.6	13.6

[1]*International Classification of Diseases, Adapted for Indexing Hospital Records by Diseases*, 1968, 8th edition.

SOURCE: National Medicare Statistical System: HCFA Internal tabulations.

X. Short-Stay Hospital Utilization by Surgical Procedure

Another measure of short-stay hospital use is the rate of use of surgical services. During the years 1967 to 1976, the proportion of aged Medicare discharges with surgery remained relatively constant at about 31 to 32 percent. However, the surgical rate per 1,000 beneficiaries rose from 85 in 1967 to 105 in 1976, reflecting the fact that the number of aged HI discharges increased at a faster rate than the total aged HI enrollment population. Data on the incidence of surgery by demographic characteristics of the beneficiaries, by region, and by hospital bed size are presented in Table 19.

A. Patient and Hospital Characteristics

The estimated proportion of aged HI discharges with surgery varied by patient and hospital characteristics during the period 1967-1976. As shown in Table 19, for each of the years 1967, 1972, and 1976, the proportion of discharges with surgery was higher for men than women, was higher for whites than non-whites, decreased with advancing age, and increased with the bed size of the hospital.

For example, in 1976, about 34 percent of all male discharges compared with 30 percent of the female patient discharges had surgery. The proportion of discharges with surgery was highest for patients aged 65 to 66 years (37 percent) and was lowest for discharges aged 85 and over (23 percent). By race, about 32 percent of the white patients discharged and 28 percent of all other races underwent surgery.

TABLE 19

Percent of Discharges with Surgery, Surgical Rate Per 1,000 Hospital Insurance (HI) Beneficiaries, and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Selected Demographic Characteristics and Bed Size of the Hospital, 1967, 1972, and 1976

Patient Characteristics, Region, and Bed Size	1967			1972			1976			Percent Change, 1967-1976		
	Percent of Discharges with Surgery	Surgical Rate Per 1,000 Beneficiaries	Average Length of Stay	Percent of Discharges with Surgery	Surgical Rate Per 1,000 Beneficiaries	Average Length of Stay	Percent of Discharges with Surgery	Surgical Rate Per 1,000 Beneficiaries	Average Length of Stay	Percent of Discharges with Surgery	Surgical Rate Per 1,000 Beneficiaries	Average Length of Stay
Total	31.8	85.4	15.2	30.9	93.4	13.4	31.6	104.9	12.8	-0.6	22.8	-15.8
Sex												
Men	34.0	98.4	14.9	33.2	109.5	13.2	34.2	120.5	12.5	0.6	22.5	-16.1
Women	30.1	75.8	15.4	29.0	82.0	13.6	29.6	94.2	13.1	-1.7	24.3	-14.9
Age												
65-66	37.8	78.0	13.2	37.2	90.0	11.8	37.2	97.6	11.4	-1.6	25.1	-13.6
67-68	36.8	80.8	13.5	36.0	89.9	12.1	36.4	96.9	11.6	-1.1	19.9	-14.1
69-70	35.5	81.7	14.1	34.1	89.6	12.5	35.4	101.3	11.9	-0.3	24.0	-15.6
71-72	34.2	83.7	14.5	32.8	92.4	13.0	34.1	104.7	12.3	-0.3	25.1	-15.2
73-74	33.1	87.5	15.0	32.0	96.9	13.2	33.2	108.6	12.6	0.3	24.1	-16.0
75-79	30.5	91.7	15.9	29.7	98.2	14.0	30.6	112.1	13.2	0.3	22.2	-17.0
80-84	26.5	92.3	17.4	26.0	97.5	15.1	27.1	111.8	14.3	2.3	21.1	-17.2
85 and over	22.5	86.1	19.3	22.4	90.4	16.3	23.1	104.0	15.8	2.7	20.8	-18.1
Race[1]												
White	32.0	88.0	15.0	31.1	95.9	13.2	31.9	106.0	12.7	(3)	20.5	-15.3
All other	29.9	58.6	17.4	28.3	68.5	15.8	27.7	74.8	15.0	-7.4	27.6	-13.8
Region[2]												
Northeast	36.1	81.2	17.4	35.0	91.8	15.4	35.4	105.2	14.8	-1.9	29.6	-15.0
North Central	31.6	90.5	16.0	30.3	97.5	14.1	31.9	112.8	13.5	1.0	24.6	-15.6
South	27.9	81.5	14.0	27.7	91.4	12.6	29.2	105.7	11.9	4.7	29.7	-15.0
West	34.4	95.1	12.2	33.3	100.1	10.6	31.2	98.3	10.3	-9.3	3.4	-15.6
Bed Size												
Less than 100	19.3	NA	14.2	17.4	NA	12.4	17.1	NA	9.1	-11.4	NA	-35.9
100-249	33.2	NA	14.6	31.9	NA	12.8	31.4	NA	10.7	-5.4	NA	-26.7
250-499	39.4	NA	15.3	36.7	NA	13.6	36.5	NA	11.8	-7.4	NA	-22.9
500 and over	42.5	NA	17.5	40.1	NA	14.9	40.0	NA	12.8	-5.9	NA	-26.7

[1]Excludes unknown race.

[2]Excludes Puerto Rico, Virgin Islands, and other areas outside the 50 States and District of Columbia.

[3]Less than 0.05 percent.

NA—Not Applicable

SOURCE: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual updates for 1972 and 1976.

The proportion of discharges with surgery increased substantially with the bed size of the hospital, from 17 percent in hospitals with less than 100 beds to 40 percent in hospitals with 500 beds or more. The ALOS for surgical cases also increased with hospital size, reflecting, perhaps, the likelihood that more complex procedures would be performed in larger hospitals.

Discharges with surgery in short-stay hospitals were associated with longer stays than those without surgery. As shown in Table 20, ALOS for discharges with surgery during the 10-year period ranged from 1.7 to 2.6 days longer than for those discharges without surgery. For example, in 1976, the ALOS was 12.8 days for discharges with surgery as compared to 10.2 days for those without surgery. For discharges with surgery, ALOS was slightly longer for women (13.1 days) than for men (12.5 days), and was longer for persons of all other races (15.0 days) than for white persons (12.7 days). Also, ALOS was longer for older age groups, ranging from 11.4 days for those persons aged 65 to 66 years to 15.8 days for persons aged 85 and over.

B. Geographic Differences in Surgical Rates

Regional differences also were evident in the relative frequency of discharges with surgery. As shown in Table 19, for each of the years 1967, 1972, and 1976 the proportion of discharges with surgery was highest in the Northeast (35 to 36 percent) and lowest in the South (28 to 29 percent). Between 1967 and 1976, the South showed the largest increase (about 5 percent) in the percent of discharges with a surgical procedure; on the other hand, the Western region showed a 9 percent decrease in discharges with surgery. Regionally, the longest ALOS for surgical stays, as was the case for non-surgical stays, was in the Northeast, followed by the North Central, the South, and the West. In 1976, ALOS for discharges with surgery was 4.5 days longer in the Northeast than in the West; in 1967, the difference was 5.2 days.

TABLE 20

Percentage Distribution and Average Length of Stay for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Surgical and Discharge Status, 1967-1976

Year	All Discharges			With Surgery			Without Surgery		
	Total	Alive	Dead	Total	Alive	Dead	Total	Alive	Dead
				Percentage Distribution					
1967	100.0	90.2	9.8	100.0	94.7	5.3	100.0	88.0	12.0
1968	100.0	90.5	9.5	100.0	94.9	5.1	100.0	88.6	11.4
1969	100.0	90.7	9.3	100.0	94.9	5.1	100.0	88.9	11.1
1970	100.0	91.0	9.0	100.0	94.9	5.1	100.0	89.3	10.7
1971	100.0	91.3	8.7	100.0	95.4	4.6	100.0	89.5	10.5
1972	100.0	91.6	8.4	100.0	95.7	4.3	100.0	89.8	10.2
1973	100.0	92.1	7.9	100.0	95.8	4.2	100.0	90.4	9.6
1974	100.0	92.4	7.6	100.0	96.1	3.9	100.0	90.8	9.2
1975	100.0	92.7	7.3	100.0	96.3	3.7	100.0	91.0	9.0
1976	100.0	93.1	6.9	100.0	96.4	3.6	100.0	91.5	8.5
				Average Length of Stay					
1967	13.8	13.8	13.9	15.2	14.8	21.2	13.1	13.2	12.4
1968	13.8	13.7	14.2	14.9	14.6	21.0	13.2	13.3	12.9
1969	13.5	13.5	14.0	14.8	14.4	21.4	13.0	13.0	12.5
1970	13.0	12.9	13.3	14.2	13.8	20.2	12.5	12.5	11.9
1971	12.5	12.4	12.7	13.8	13.5	20.0	11.9	11.9	11.4
1972	12.1	12.0	12.5	13.4	13.1	20.3	11.5	11.5	11.0
1973	11.7	11.7	12.4	13.1	12.8	20.1	11.0	11.1	10.9
1974	11.5	11.4	12.4	13.0	12.7	20.7	10.9	10.9	10.8
1975	11.2	11.1	12.2	12.7	12.3	21.3	10.5	10.5	10.5
1976	11.1	11.0	12.4	12.8	12.5	22.3	10.2	10.2	10.5

SOURCE: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1968-1976.

C. Surgical Procedures

In 1976, among the 13 major Current Procedural Terminology (CPT) surgical classes shown in Table 21, surgery of the digestive system was the leading surgical group (Current Procedural Terminology, 1967). Other leading surgical classes involved the musculoskeletal system, the eye, and the integumentary system. Surgery of the digestive system accounted for about 23 percent of all discharges with surgery; the next three leading surgical classes accounted for another 36 percent. Here again, the categories subsume a range of specific procedures that vary in resources required to administer them. Hence, the hospital utilization data shown for each category should be taken only as general indications of beneficiary experiences.

ALOS varied substantially among the 13 major CPT classes. The shortest stays were registered for discharges with eye and ear surgery while the longest stays were incurred for discharges with surgery of the musculoskeletal and nervous systems. In 1976, the ALOS ranged from 4.9 days and 5.1 days for ear and eye surgery, respectively, to 17.9 days and 18.7 days for surgery of the nervous and musculoskeletal systems, respectively.

Total hospital charges varied considerably among the 13 major CPT surgical groups. In 1976, mean total charges per discharge ranged from $973 for eye surgery to $4,956 for surgery of the cardiovascular system. The low mean charge per discharge for eye surgery reflects a combination of a low ALOS (5.1 days) and a relatively low mean charge per day ($190). The high mean charge per day for cardiovascular surgery ($232) suggests a high proportion of ancillary to total charges and a large proportion of patients who died (after surgery) following a very short period of hospitalization.

XI. Deaths in Short-Stay Hospitals

The proportion of aged Medicare discharges from short-stay hospitals that ended with the death of the patient has decreased steadily since the start of the HI program. As shown in Table 20, the percentage of deaths for discharges decreased from 9.8 in 1967 to 6.9 in 1976. The proportion of discharges ending with the death of the patient was greater for discharges without surgery than for those with surgery. As discussed below, this is due to the fact that nearly 21 percent of all deaths in hospitals occurred during the first day following admission and most of these cases did not involve surgery. The mortality rate per 100 discharges of patients with surgery dropped from 5.3 in 1967 to 3.6 in 1976; for non-surgical discharges the mortality rate dropped from 12.0 to 8.5.

Table 18 shows that deaths of aged Medicare HI beneficiaries were heavily clustered in a few diagnostic classifications. Nearly 40 percent of all hospital episodes that ended in death were concentrated in 5 of the 29 leading primary discharge diagnoses; conditions related to diseases of the heart alone accounted for about 24 percent. During 1976, the percentages of discharges ending in death were highest for acute myocardial infarction (26.4), malignant neoplasms of bronchus and lung (22.1), and acute cerebrovascular disease (19.8).

During the study period, the ALOS for patients discharged dead was longer than for patients discharged alive. ALOS by discharge status varied considerably according to whether or not surgery was performed. During the period 1967 to 1976, of discharges with surgery, the ALOS for patients discharged dead was, on the average, over a week longer than of those dis-

TABLE 21

Percentage Distribution of Discharges with Surgery, Average Length of Stay, and Mean Charges Per Discharge and Per Day for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Major Current Procedural Terminology (CPT) Category, 1976

Major Current Procedural Terminology Category	CPT Codes[1]	Percentage Distribution of Discharges with Surgery	Average Length of Stay	Mean Total Charges	
				Per Discharge	Per Day
Total, all categories	—	100.0	12.8	$2,581	$201
Integumentary system	010-048	11.4	12.5	2,322	185
Musculoskeletal system	050-181	12.5	18.7	3,293	175
Respiratory system	190-228	4.2	14.3	3,385	236
Cardiovascular system	230-258	5.8	15.3	4,956	232
Hemic and lymphatic system	260-269	0.9	14.5	3,004	206
Digestive system	270-373	23.1	14.3	2,891	202
Urinary system	380-403	9.8	10.6	1,945	184
Male genital system	410-432	8.2	12.2	2,212	181
Female genital system	440-487	3.9	9.4	1,649	174
Endocrine system	490-499	0.4	10.0	2,112	211
Nervous system	500-539	1.6	17.9	3,797	212
Eye	540-584	12.1	5.1	973	190
Ear	590-603	0.4	4.9	1,017	206
Unknown codes	—	5.7	13.3	2,648	199

[1]*Current Procedural Terminology (CPT)* manual, published by the American Medical Association, 1st Edition, 1967.

SOURCE: National Medicare Statistical System, Internal HCFA tabulations.

charged alive. In contrast, of discharges without surgery, ALOS by discharge status usually differed by less than one-half day (Table 20).

The distribution of the discharges by length of stay varied considerably by discharge status (Table 22). A large proportion of patients discharged dead had a short period of hospitalization; for example, in 1976, about 21 percent had stays of one day or less. On the other hand, a relatively high proportion (7 percent) of discharges ending with the death of the patient exceeded 36 days.

XII. Short-Stay Hospital Utilization by Persons Served: Single and Multiple Stays

Up to this point, the discussion of short-stay hospital utilization under Medicare during the period 1967 to 1976 was based on the hospital episode ending in a discharge. However, the Medicare statistical system is designed so that discharge records for short-stay hospital services can be assembled for each insured individual. Statistical records maintained on a "person" basis make it possible to cumulate multiple hospital episodes for each individual beneficiary and to record that person's total pattern of use and the amounts reimbursed on his or her behalf. This section of the report, therefore, presents data and information on the number of aged persons discharged from short-stay hospitals under the Medicare HI program during the period 1967 to 1976.

As shown in Table 23, an estimated 5.2 million aged persons were discharged from short-stay hospitals under the Medicare HI program in 1976. For these persons, approximately 70.5 percent had one hospital stay, 19.8 percent had two stays, and 9.7 percent had three stays or more. In all, these 5.2 million persons accounted for about 7.6 million discharges, or an average of 1.45 discharges per person.

The proportion of persons with multiple stays increased over the period 1967 to 1976, rising from an estimated 25.4 percent in 1967 to 29.5 percent in 1976. Correspondingly, the proportion of discharges associated with persons having multiple stays increased from 46.1 percent in 1967 to 51.4 percent in 1976, while the total days of care increased from 45.4 percent to 51.9 percent. The number of discharges per person increased from 1.39 in 1967 to 1.45 in 1976.

The South, the region with the highest rate of discharges per 1,000 beneficiaries (362) had the highest proportion of patients with multiple stays (31 percent) during 1976.[13] Conversely, the Northeast, the region with the lowest rate of discharges per 1,000 beneficiaries (297) displayed the lowest percentage of patients with multiple stays (27 percent). Therefore, factors such as distance, population density, availability of physicians and medical resources, and local patterns of medical practice, which were suggested as possible variables influencing the admittance of persons for inpatient care, also probably account for the pattern of multiple hospital stays.

[13]Based on internal HCFA tabulations.

TABLE 22

Number and Percentage Distribution of Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals, by Discharge Status, 1967 and 1976

Length of Stay	Alive					Dead				
	1967		1976			1967		1976		
	Number (in thousands)	Percent	Number (in thousands)	Percent	Percent Change 1967-1976	Number (in thousands)	Percent	Number (in thousands)	Percent	Percent Change 1967-1976
Total	4,713	100.0	7,078	100.0	50.2	515	100.0	528	100.0	2.5
One day or less	134	2.8	204	2.9	52.2	102	19.8	110	20.8	7.8
2-3 days	515	10.9	1,004	14.2	95.0	67	13.0	72	13.6	7.5
4-5 days	613	13.0	1,125	15.9	83.5	48	9.3	52	9.8	8.3
6-7 days	609	12.9	973	13.7	59.8	38	7.4	42	8.0	10.5
8-10 days	735	15.6	1,148	16.2	56.2	47	9.1	50	9.5	6.4
11-14 days	665	14.1	982	13.9	47.7	49	9.5	51	9.7	4.1
15-21 days	653	13.9	884	12.5	35.4	56	10.9	57	10.8	1.8
22-28 days	328	7.0	374	5.3	14.0	35	6.8	34	6.4	-2.9
29-35 days	173	3.7	171	2.4	-1.2	24	4.7	21	4.0	-12.5
36-42 days	97	2.1	87	1.2	-10.3	16	3.1	13	2.5	-18.7
43 or more days	189	4.0	127	1.8	-32.8	34	6.6	26	4.9	-23.5

SOURCE: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished update for 1976.

TABLE 23

Number and Percent of Persons Served for Aged Medicare Beneficiaries Discharged from Short-Stay Hospitals with One or More Hospital Stays, 1967, 1972, and 1976

Number of Stays Per Person Served	Persons Served		Discharges		Days of Care	
	Number (in thousands)	Percent	Number (in thousands)	Percent	Number (in thousands)	Percent
			1967			
All stays	3,774	100.0	5,228	100.0	72,146	100.0
1 stay only	2,815	74.6	2,815	53.8	39,392	54.6
2 stays only	681	18.0	1,360	26.0	19,696	27.3
3 stays or more	278	7.4	1,053	20.1	13,058	18.1
			1972			
All stays	4,507	100.0	6,380	100.0	77,198	100.0
1 stay only	3,257	72.3	3,257	51.0	39,217	50.8
2 stays only	860	19.1	1,720	27.0	21,615	28.0
3 stays or more	390	8.6	1,403	22.0	16,366	21.2
			1976			
All stays	5,235	100.0	7,607	100.0	84,438	100.0
1 stay only	3,692	70.5	3,692	48.5	40,644	48.1
2 stays only	1,036	19.8	2,072	27.2	23,743	28.1
3 stays or more	507	9.7	1,843	24.2	20,051	23.8

Source: Office of Research and Statistics, "Medicare: Hospital Insurance (HI) for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1972 and 1976.

In 1976, as shown in Table 24, mean days of care per person averaged 16.1 days. Persons with one stay averaged 11.0 days. Persons with two stays averaged 22.9 days of care, thus the second hospital stay appears to average the same length as the first. Persons with three or more stays averaged 39.4 days of care, approximately three and a half times that for persons with only one stay. This pattern was also generally true for the years 1967 and 1972.

Mean charges per person in 1976 averaged $2,725. Mean charges per person with one stay averaged $1,881, doubled for persons with two stays ($3,864), and increased approximately three and a half times for persons with three stays or more ($6,538). Again, this pattern was generally true for the years 1967 and 1972.

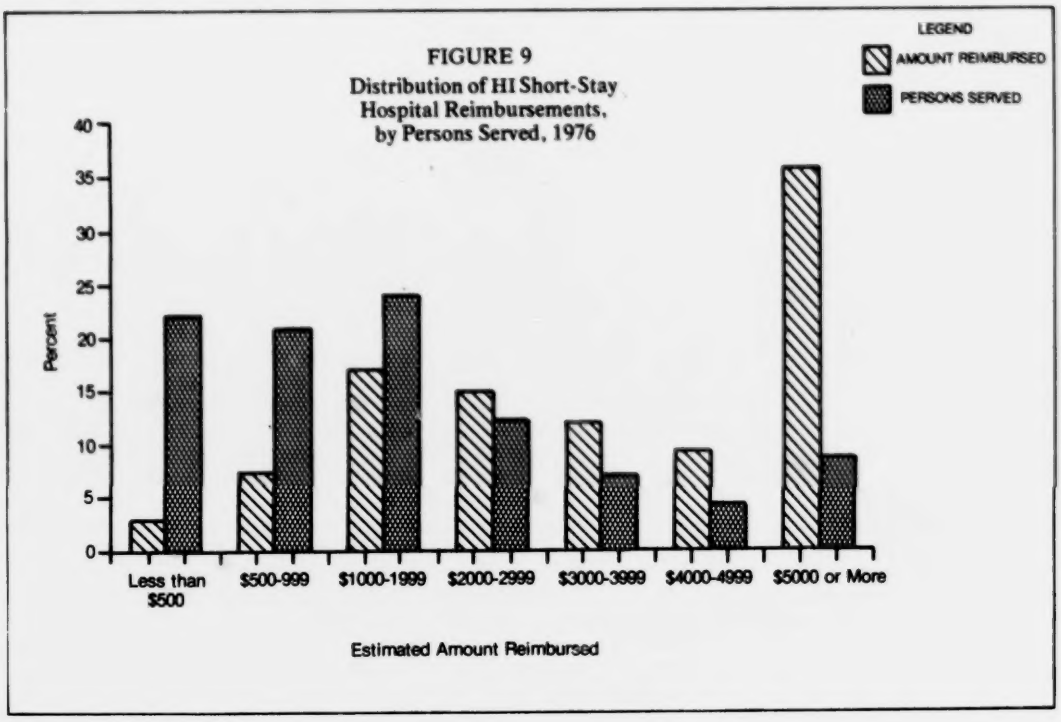
A relatively small proportion of the persons discharged from short-stay hospitals accounts for the major share of the amounts reimbursed by HI.[14] Figure 9 shows the percentage distribution of persons reimbursed for hospital care during 1976 by the amount reimbursed (on an interim basis). For about 22 percent of all persons discharged from short-stay hospitals, reimbursements were less than $500 each and accounted for only three percent of the total amount reimbursed under HI. In contrast, for nine percent of the persons, reimbursements were $5,000 or more and accounted for 36 percent of the total funds expended. Approximately one percent of the aged persons discharged from short-stay hospitals were not reimbursed under the HI program.

[14]Based on internal HCFA tabulations.

TABLE 24
Number and Annual Rate of Persons Discharged, Mean Days of Care, and Mean Charges for Aged Persons with One or More Hospital Stays Under Medicare Hospital Insurance (HI), 1967, 1972 and 1976

Number of Hospital Stays	1967	1972	1976	Percent Change 1967-1976
All persons				
Persons with one stay or more:				
Number (in thousands)	3,774	4,507	5,235	38.7
Discharge rate per 1,000 beneficiaries	194	213	228	17.5
Mean days per person	19.1	17.1	16.1	-15.7
Mean charges per person	$ 935	$1,642	$2,725	191.4
Persons with one stay:				
Number (in thousands)	2,815	3,257	3,692	31.2
Discharge rate per 1,000 beneficiaries	144	154	161	11.8
Mean days per person	14.0	12.0	11.0	-21.4
Mean charges per person	$ 698	$1,180	$1,881	169.5
Persons with two stays:				
Number (in thousands)	681	860	1,036	52.1
Discharge rate per 1,000 beneficiaries	35	41	45	28.6
Mean days per person	28.8	25.0	22.9	-20.5
Mean charges per person	$1,403	$2,387	$3,864	175.4
Persons with three stays or more:				
Number (in thousands)	278	390	507	82.4
Discharge rate per 1,000 beneficiaries	14	18	22	57.1
Mean days per person	46.9	41.9	39.4	-16.0
Mean charges per person	$2,190	$3,854	$6,538	198.5

Source: Office of Research and Statistics, "Medicare: HI for the Aged, Section 4.1: Short-Stay Hospital Utilization, 1967," and annual unpublished updates for 1972 and 1976.



XIII. Utilization of Short-Stay Hospitals: Comparison of the Aged Hospital Insurance (HI) and Total U.S. Population, 1976

This section of the report compares the use of short-stay hospitals by the aged Medicare HI population and the total U.S. population. In general, increased rates of illness and longer duration of stay are associated with the elderly. As a result, the aged population used hospital care services at a much higher rate than the population as a whole during 1976.

As shown in Table 25, in 1976, the rate of total hospital use for the aged HI population was nearly 3 times greater than that of the entire population; the TDOC rate per 1,000 population was 3,684 and 1,236, respectively. This resulted from the fact that the discharge rate per 1,000 population for the aged HI group (332) was nearly twice as large as that for the entire population (163), and the ALOS for the HI elderly (11.1 days) was 3.5 days longer, or almost 50 percent greater than for the population as a whole.

The rate of surgical procedures was not as great for the aged HI population as for the entire population. In 1976, approximately one-third (31.6 percent) of all aged HI patients discharged from short-stay hospitals underwent a surgical procedure. The higher proportion of surgery (41.4 percent) for the total population reflects the larger number of surgical procedures that are commonly associated with persons under age 65, such as tonsillectomy (with or without adenoidectomy) and various obstetrical and gynecological procedures.

Deaths per 100 discharges was, of course, much higher among the aged HI population than the total population. In 1976, the proportion of deaths for all ages was 2.5 per 100 discharges; for persons aged 65 and over it was 6.9 per 100 discharges.

TABLE 25
Comparison of Utilization of Short-Stay Hospitals by the Aged Medicare Hospital Insurance (HI) Population and the Total U.S. Population, 1976

Item	Total U.S. population	Medicare HI aged population
Number:		
Discharges (in thousands)	34,372	7,607
Days of Care (in thousands)	260,272	84,438
Average Length of Stay	7.6	11.1
Rate Per 1,000 Population:		
Discharge Rate	163	332
Days of Care Rate	1,236	3,684
Percent of Discharges with:		
Surgery	41.4	31.6
Deaths	2.5	6.9

XIV. Summary

The data in this report show that the Medicare HI program reduced financial barriers to the use of short-stay hospital services by the aged population. With the inception of the Medicare HI program, nearly all persons aged 65 and over—about 19.1 million—were eligible for HI benefits; nearly half of these aged persons had no previous hospital insurance protection. By July 1976, the aged HI enrolled population reached 22.9 million.

The initial impact of the Medicare HI program was greater use of short-stay hospitals by the aged beneficiaries. The use of inpatient services (as measured by the TDOC rate) was about 25 percent higher during the first year (1967) of the program than in the preceding year. This rise in total hospital use reflected an increase of an estimated 11 percent in the discharge rate per 1,000 beneficiaries and 12 percent in the ALOS.

Program data show that the hospital discharge rate continued to increase (about 24 percent higher in 1976 than 1967). In contrast, ALOS declined substantially (about 20 percent), offsetting the rise in the discharge rate. Therefore the rate of total hospital use was about the same in 1976 as during 1967.

The Medicare HI program finances the major portion of the hospital care bill for persons aged 65 and over. In 1976, Medicare financed about 73 percent of the total hospital care expenditures for the aged; Medicaid and other public programs financed about 15 percent, and private payments accounted for the remaining 12 percent. In contrast, in the year preceding the initiation of the Medicare program, private payments accounted for approximately 50 percent of all hospital expenses for the aged.

Thus, compared to the situation prior to the implementation of Medicare and Medicaid, public programs in general and Medicare in particular have assumed a major portion of the burden of paying for hospital services to the aged. However, the period since 1967 has been marked by large increases in the costs of producing hospital services. The increased costs of hospital care are clearly reflected in Medicare HI reimbursements. During the first ten years of the Medicare HI program, the amount expended for HI short-stay hospital services to the aged nearly quadrupled, going from $2.8 billion in 1967 to $10.6 billion in 1976. The mean reimbursement per discharge more than doubled, going from $528 to $1,392, and the mean reimbursement per day more than tripled, going from $38 to $125.

The rapid inflation in the cost of hospital services has had the effect of progressively diluting the intended relief to be provided to the aged by the payments for hospital services from public programs. In 1967, the liabilities of aged persons using hospital services under Medicare amounted to about $342 million or $91 per person hospitalized during the year. By 1976, this increased to about $1 billion or about $181 per beneficiary using hospital services. On an individual basis, this represents an increase of close to 100 percent.

The adverse impact of the rapid rate of increase in hospital costs touches more than just the aged. The proportion of the gross national product (GNP) devoted to personal hospital care services increased from 2.1

percent in 1967 to 3.4 percent in 1976. This diverted funds that could have been available for other national goals had the proportion remained the same. The current level of discussions and efforts to find ways of arresting the rate of increase in the costs of hospital services is one indication that the problem of hospital costs is broader than just paying for the care of the aged. The dominant role of public programs in paying for hospital services to the aged makes the issue a matter of concern for all taxpayers. Unless rising hospital costs can be controlled, the aging of the American population will make the problem of redirecting national resources to other goals even more difficult in the future.

Appendix A

The Medicare Statistical System

With the enactment of the Hospital Insurance (HI) program for the aged (Medicare), a statistical system was designed to provide basic data on program operation. By means of the beneficiary's HI claim number, service utilization data can be linked by person. This system provides data for a variety of analytical and research studies. It is especially useful for measuring and evaluating the differential use of program benefits by specified groups of beneficiaries, the administrative performance of the program, and in identifying areas where legislative and policy changes need to be considered.

The data shown in this report were derived from special reports prepared in HCFA from short-stay hospital discharge records in the master inpatient stay record file. This file, a principal component of the Medicare statistical system, is generated by linking information from three HCFA master program files for a 20 percent sample of Medicare beneficiaries. Whenever a beneficiary in the sample completes a period of hospitalization, the following process takes place to create a statistical discharge record for the file.

First, information is derived from the billing form (SSA-1453) for inpatient services submitted for payment by participating short-stay hospitals. After a discharge bill has been received and processed to the Central Hospital Bill master file, a statistical discharge record is created for a 20 percent sample of HI beneficiaries. The discharge record consists of one or more bills depending on the length of stay and hospital billing procedures. These are linked by means of the beneficiary's HI claim number. Utilization data selected from the bill for the statistical discharge record include primary diagnosis, surgical procedure, indicator of additional diagnoses and discharge status, length of stay, services provided, and charges rendered.

Second, by means of the beneficiary's claim number, this record is matched to the Health Insurance Entitlement master file which identifies each aged person eligible for HI benefits. Beneficiary characteristics such as age, race, sex, and residence are selected from the file and merged with the data describing the beneficiary's period of hospitalization.

Finally, the statistical discharge record is matched to the Provider of Services master file, which contains information about the hospital from which the patient was discharged. The data selected include such hospital characteristics as size, ownership, teaching status, and number of facilities and services available.

The statistical discharge record produced by these three steps provide information on the patient, the hospital, and the hospitalization. Accumulation of these records for all beneficiaries in the 20 percent sample results in the creation of the master inpatient stay record file.

In addition to the data obtained from the master inpatient stay record file, information from HCFA publications, unpublished tabulations generated from the Medicare statistical system, statistical reports prepared by the Social Security Administration, the American Hospital Association, the U.S. Public Health Service, and the Census Bureau were used to prepare this report.

Appendix B

Reliability of Estimates

Most of the data in this report are estimates based on a 20 percent sample of the enrolled population and hence are subject to sampling variability. Tables A through K enable the user to obtain approximate standard errors for most of the estimates in this report. The standard error is primarily a measure of sampling variability—that is, of the variation that occurs by chance because a sample rather than a whole population is used. To calculate the standard errors at a reasonable cost for the wide variety of estimates in this note, it was necessary to use approximation methods. Thus, these tables should be used only as indicators of the order of magnitude of the standard errors for specific estimates. In general, small estimates, estimates for small subgroups, and percentages or means with small bases tend to be relatively unreliable.

As stated in the Primary Limitations of Data section, the sample data are incomplete because of bill processing delays. To adjust for this shortfall, a technique of ratio estimation of totals was employed as described below.

Let X = total unknown discharges for a given year
x = number of discharges in the sample for a given year
y = sample amount for any variable (discharges, days, dollars, etc.) for which an estimated total is needed
R = X/x = ratio of total unknown discharges to sample discharges
Ry = estimated total for any variable

To illustrate, in 1976 there were 7,607,000 known discharges and 1,467,000 discharges in the sample. Therefore

$$R = \frac{7{,}607{,}000}{1{,}467{,}000} = 5.19$$

The amount of reimbursement in the sample was about $2,040,300,000. Thus, the estimated total reimbursement for 1976 was

(5.19) ($2,042,000) = $10,589,000,000

Similarly, the estimated number of days of care for persons with three or more stays is (5.19) (38,700) = 201,000 days.

This ratio estimation of totals is not reflected in the tables of this section since its effect on the standard errors is believed to be negligible.

TABLE A
Approximate Standard Error of Estimated Number of Discharges and Estimated Number of Persons Served

Estimated Number of Discharges or Number of Persons Served	Standard Error	
	Discharges	Persons
500	66	47
1,000	94	67
5,000	210	150
10,000	300	210
25,000	470	340
50,000	660	480
100,000	930	690
150,000	1,100	850
200,000	1,300	990
250,000	1,500	1,100
500,000	2,100	1,700
750,000	2,500	2,100
1,000,000	2,900	2,500
2,000,000	4,100	4,000
3,000,000	5,100	5,300
4,000,000	5,800	6,600
5,000,000	6,500	7,900
6,000,000	7,100	9,100
7,000,000	7,700	10,000
8,000,000	8,200	11,000

TABLE B
Approximate Standard Error of Estimated Days of Care

Estimated Days of Care	Standard Error
500	220
1,000	320
5,000	740
10,000	1,100
50,000	2,500
100,000	3,600
200,000	5,100
300,000	6,300
400,000	7,400
500,000	8,300
750,000	10,000
1,000,000	12,000
1,500,000	15,000
2,000,000	17,000
2,500,000	19,000
3,000,000	21,000
5,000,000	28,000
7,500,000	34,000
10,000,000	40,000
15,000,000	49,000
20,000,000	57,000
30,000,000	71,000
40,000,000	83,000
50,000,000	93,000
60,000,000	100,000
70,000,000	110,000
80,000,000	120,000
90,000,000	130,000

TABLE C
Approximate Standard Error of Estimated Hospital Reimbursement under Medicare

Estimated Reimbursement	Standard Error
$1,000,000,000	$ 4,100,000
2,000,000,000	6,020,000
3,000,000,000	7,400,000
4,000,000,000	8,440,000
5,000,000,000	9,200,000
6,000,000,000	9,740,000
8,000,000,000	10,200,000

TABLE D
Approximate Standard Error of Estimated Hospital Charges

Estimated Charges	Standard Error
$ 1,000,000	$ 140,000
2,000,000	210,000
3,000,000	260,000
4,000,000	310,000
5,000,000	350,000
10,000,000	510,000
50,000,000	1,300,000
100,000,000	1,900,000
300,000,000	3,400,000
500,000,000	4,600,000
1,000,000,000	6,800,000
2,000,000,000	10,000,000
3,000,000,000	13,000,000
4,000,000,000	15,000,000
5,000,000,000	17,000,000
6,000,000,000	18,000,000
7,000,000,000	20,000,000
8,000,000,000	22,000,000
9,000,000,000	23,000,000
10,000,000,000	25,000,000
11,000,000,000	26,000,000
12,000,000,000	27,000,000
13,000,000,000	28,000,000
14,000,000,000	30,000,000

TABLE E
Approximate Standard Error of Total Days Per Discharge

Days Per Discharge	Base of Rate (number of discharges in thousands)												
	.5	1	5	10	50	100	200	500	1,000	2,000	4,000	6,000	8,000
5	.76	.54	.25	.18	.086	.062	.044	.029	.021	.015	.011	.0089	.0078
8	.98	.70	.33	.23	.11	.078	.056	.036	.026	.019	.014	.011	.0097
9	1.1	.76	.35	.25	.12	.083	.060	.039	.028	.020	.014	.012	.010
10	1.1	.81	.37	.27	.12	.088	.063	.041	.029	.021	.015	.013	.011
15	1.5	1.1	.50	.35	.16	.12	.082	.053	.038	.027	.019	.016	.014
20	2.0	1.4	.63	.45	.20	.14	.10	.065	.046	.033	.024	.019	.017
25	2.4	1.7	.77	.55	.25	.17	.12	.078	.056	.040	.028	.023	.020
30	2.9	2.1	.92	.65	.29	.21	.15	.092	.065	.046	.033	.027	.023

TABLE F
Approximate Standard Error of Percent Distribution of Discharges

Percent	Base of Percentage (number of discharges in thousands)											
	2	5	10	25	50	100	250	500	1,000	3,000	5,000	8,000
1 or 99	.66	.42	.29	.19	.13	.093	.059	.042	.030	.018	.014	.012
2 or 98	.93	.58	.41	.26	.18	.13	.082	.059	.042	.025	.020	.017
5 or 95	1.4	.91	.64	.41	.29	.20	.13	.091	.065	.039	.031	.026
10 or 90	2.0	1.3	.88	.56	.39	.28	.18	.13	.089	.054	.043	.036
15 or 85	2.4	1.5	1.1	.66	.47	.33	.21	.15	.11	.064	.051	.042
20 or 80	2.6	1.7	1.2	.74	.53	.37	.24	.17	.12	.071	.057	.047
30 or 70	3.0	1.9	1.4	.85	.60	.43	.27	.19	.14	.081	.065	.053
40 or 60	3.2	2.0	1.4	.91	.64	.46	.29	.20	.15	.086	.068	.056
50	3.3	2.1	1.5	.93	.66	.47	.29	.21	.15	.087	.069	.056

TABLE G
Approximate Standard Error of Percent Distribution of Days of Care

Percent	Base of Percentage (total days of care in thousands)											
	10	50	100	300	500	1,000	3,000	5,000	10,000	30,000	50,000	90,000
1 or 99	1.1	.51	.36	.22	.17	.12	.072	.057	.041	.025	.020	.016
2 or 98	1.9	.71	.51	.30	.24	.17	.10	.080	.058	.035	.028	.022
5 or 95	2.4	1.1	.80	.47	.37	.27	.16	.12	.090	.055	.044	.034
10 or 90	3.3	1.5	1.1	.65	.51	.37	.22	.17	.12	.075	.060	.047
15 or 85	3.9	1.8	1.3	.77	.60	.43	.26	.20	.15	.089	.071	.055
20 or 80	4.3	2.0	1.5	.86	.68	.49	.29	.23	.16	.099	.079	.062
30 or 70	4.9	2.3	1.7	.98	.77	.55	.33	.26	.19	.11	.090	.070
40 or 60	5.3	2.4	1.8	1.0	.82	.59	.35	.28	.20	.12	.095	.073
50	5.3	2.5	1.8	1.1	.83	.60	.36	.28	.20	.12	.096	.074

TABLE H
Approximate Standard Error of Hospital Charges Per Discharge

Hospital Charge Per Discharge	Base of Rate (number of discharges in thousands)										
	.5	1	5	10	50	100	500	1,000	3,000	5,000	8,000
$ 50	$ 31	$ 23	$ 12	$ 8.6	$ 4.3	$ 3.2	$ 1.6	$ 1.2	$ .72	$ .58	$ .47
100	44	33	16	12	6.1	4.5	2.2	1.7	1.0	.83	.67
200	61	46	23	17	8.5	6.3	3.2	2.3	1.5	1.2	.96
400	84	62	31	23	12	8.8	4.4	3.3	2.0	1.6	1.3
600	100	75	38	28	14	11	5.3	4.0	2.5	2.0	1.6
800	120	86	43	32	16	12	6.1	4.5	2.8	2.3	1.9
1,000	130	96	48	36	18	13	6.7	5.0	3.1	2.5	2.1
1,500	160	120	59	44	22	16	8.1	6.0	3.8	3.0	2.5
2,000	200	140	70	51	25	19	9.3	6.9	4.3	3.5	2.8
3,000	280	200	92	67	32	23	11	8.4	5.2	4.2	3.4
5,000	450	320	140	100	46	33	16	11	6.9	5.5	4.5
7,000	640	450	200	140	62	44	20	15	8.7	6.9	5.6
9,000	840	590	260	180	80	56	25	18	11	8.3	6.7

TABLE I
Approximate Standard Error of Hospital Charges Per Day

Hospital Charge Per Day	Base of Rate (total days of care in thousands)									
	.5	1	5	10	50	100	500	1,000	3,000	6,000
$ 50	$ 20	$ 15	$ 7.4	$ 5.5	$ 2.8	$ 2.1	$1.1	$ .79	$ .50	$ .37
100	25	19	9.4	7.0	3.5	2.6	1.3	.99	.62	.47
150	33	24	12	8.5	4.2	3.1	1.5	1.1	.72	.53
200	42	30	14	10	5.0	3.6	1.8	1.3	.81	.60
400	93	66	30	21	9.7	6.9	3.2	2.3	1.4	.97
600	150	110	49	35	16	11	5.1	3.6	2.1	1.5
800	220	160	71	50	23	16	7.3	5.2	3.0	2.1
1,000	290	200	93	66	30	21	9.6	6.8	4.0	2.8

TABLE J
Approximate Standard Error of Total Days of Care Per 1,000 Beneficiaries

Estimated Days of Care Per 1,000 Beneficiaries	Base of Rate (number of persons enrolled in thousands)									
	5	10	25	50	100	500	1,000	5,000	15,000	25,000
500	100	74	48	34	25	12	8.3	3.9	2.3	1.8
1,000	150	110	69	50	36	17	12	5.6	3.3	2.6
2,000	210	150	99	71	51	24	17	8.0	4.7	3.7
3,000	260	190	120	88	63	30	21	9.9	5.9	4.6
5,000	340	250	160	120	83	39	28	13	7.7	6.0
10,000	500	360	230	170	120	56	40	19	11	8.7

TABLE K
Approximate Standard Error of Discharges Per 1,000 Beneficiaries

Estimated Discharges Per 1,000 Beneficiaries	Base of Rate (number of persons enrolled in thousands)										
	25	50	100	250	500	750	1,000	2,500	5,000	10,000	20,000
10	1.9	1.4	1.0	.6	.4	.4	.3	.2	.1	.1	.1
20	2.7	1.9	1.4	.9	.6	.5	.4	.3	.2	.1	.1
30	3.4	2.4	1.7	1.1	.7	.6	.5	.3	.2	.2	.1
40	3.9	2.7	1.9	1.2	.9	.7	.6	.4	.3	.2	.1
50	4.3	3.1	2.2	1.4	.9	.8	.7	.4	.3	.2	.2
100	6.1	4.3	3.0	1.9	1.3	1.1	.9	.6	.4	.3	.2
150	7.5	5.3	3.7	2.3	1.6	1.3	1.1	.7	.5	.4	.3
200	8.6	6.1	4.3	2.7	1.9	1.5	1.3	.8	.6	.5	.4
250	9.6	6.8	4.7	3.0	2.1	1.7	1.5	.9	.7	.6	.5
300	10.5	7.4	5.2	3.2	2.3	1.9	1.6	1.1	.8	.7	.6
350	11.3	8.0	5.6	3.5	2.5	2.0	1.7	1.1	.9	.7	.7
400	12.1	8.5	6.0	3.7	2.6	2.1	1.9	1.2	1.0	.8	.8
450	12.8	9.0	6.3	4.0	2.8	2.3	2.0	1.3	1.1	.9	.8
500	13.5	9.5	6.7	4.2	2.9	2.4	2.1	1.4	1.1	1.0	.9
550	14.2	10.0	7.0	4.4	3.1	2.5	2.2	1.5	1.2	1.1	1.0

Appendix C

Definitions

Annual Rates Per 1,000 Beneficiaries: The ratio of the total number of discharges, days of care, or persons served (multipled by 1,000) to the number of persons entitled to benefits on July 1 of that year.

Days of Care: A day during which inpatient hospital services were furnished to a person eligible for HI benefits under Medicare and who was discharged during the period January 1—December 31 of each year.

Discharge: The formal release of an inpatient from a hospital. All discharges including those of persons who died during hospitalization are included.

Geographic Classifications: Based on the address to which the cash benefit check is being mailed or the mailing address recorded in the HIE master file at the time the bill is processed by the Social Security Administration regardless of the reference date of the table.

- All Areas: Consists of the United States, Puerto Rico, and Virgin Islands.
- United States: Consists of the 50 States and the District of Columbia.

Hospital Charges: The hospital's charges for room, board, and ancillary services as recorded on the billing form.

Length of Stay: The number of days of care for a discharge. The day of discharge is not counted as a day of care. A hospitalization of less than 1 day, i.e., the patient is admitted and discharged on the same day, is counted as 1 day.

Personal Characteristics:

- Age: Completed years at last birthday in month of admission to hospital.
- Race: White, all other races, or race unknown as entered into the Health Insurance Entitlement (HIE) master file from basic records completed by the primary beneficiary. Race unknown, whether or not specifically indicated in a table, is included in the "all persons" or equivalent totals.
- Sex: As designated in the HIE master file.

Primary Diagnosis: All diagnostic information shown in these tables is classified according to the eighth revision of the *International Classification of Diseases, Adapted for Use in the United States, 1967 (ICDA-8).* Three or four-digit codes are assigned for each primary diagnosis. If more than one diagnosis is primary, the first diagnosis is indicated by a one-digit code. Diagnostic data contained in HI reports prior to 1971 were based on the seventh revision of ICDA.

Reimbursement: Payments under the HI program which are shown in this report are based on interim reimbursement rates established to reflect current costs as closely as possible, usually established as a per diem amount or on percentages of total charges. Figures shown exclude amounts for which the patient is responsible such as deductibles, coinsurance, and charges for non-covered services. The final amount of reimbursement due under Medicare to each provider of medical services is determined after the end of the fiscal year on the basis of the provider's audited reasonable costs of operation.

Short-Stay Hospitals: General and special hospitals certified as participating facilities under Medicare and reporting average stays of less than 30 days.

Surgery: Includes any operative procedures recorded on the patient's billing form defined as surgery in the First Edition of the *Current Procedural Terminology* (CPT) manual published by the American Medical Association. This includes procedures involving incision, excision, amputation, introduction, endoscopy, repair, destruction, suture, or manipulation. When two or more surgical procedures appear on the bill, the first listed surgical procedure is coded.

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